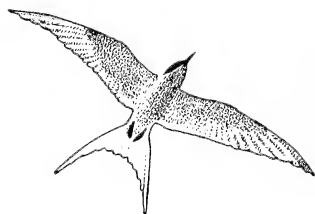
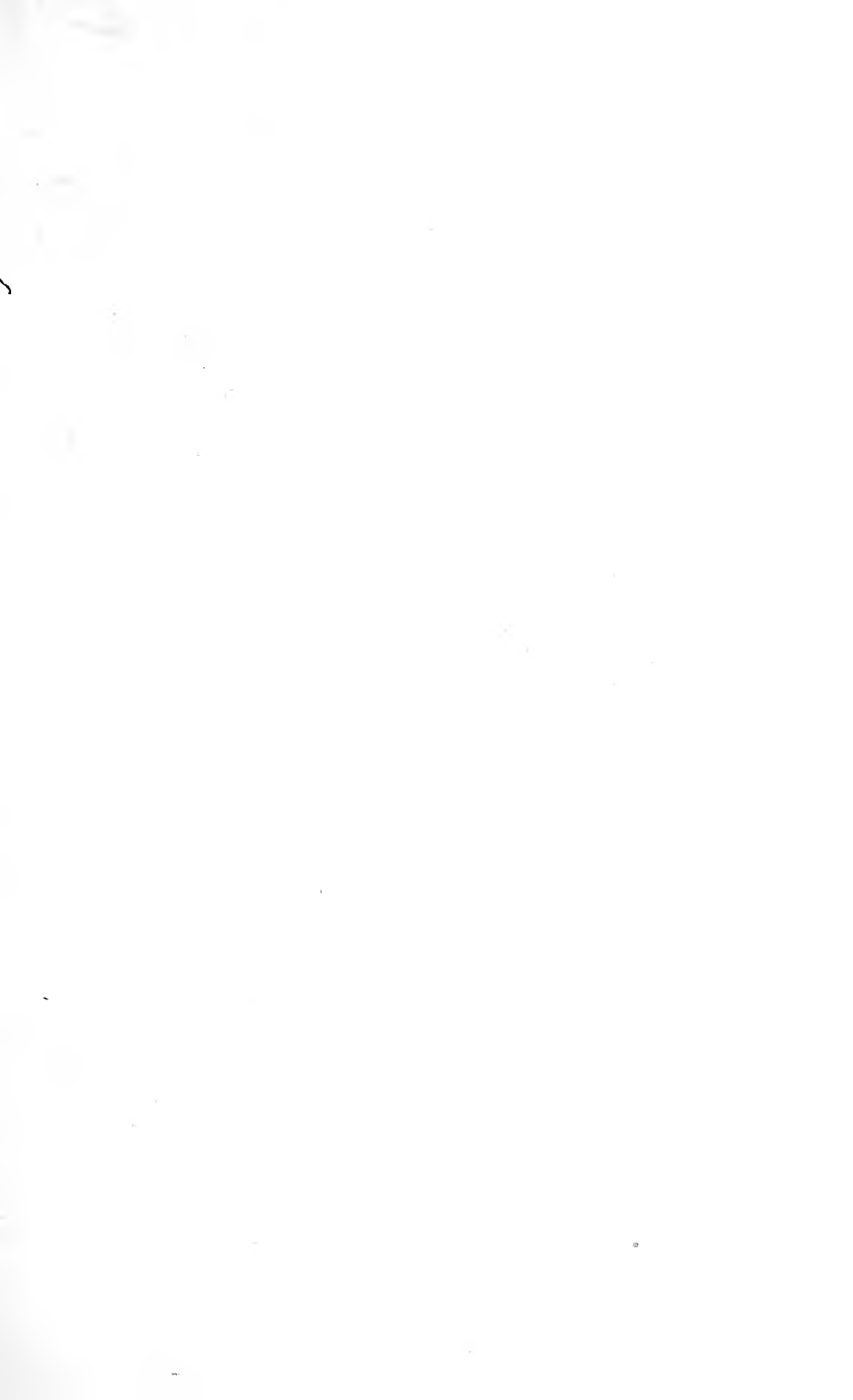


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by
Elliott Coues^e

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Dates of Works of Authors cited.

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1748	Linnaeus	do do Ed. VI.
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Date Works Author added.

Subfamily. AULOSTOMINÆ Gill.

AULOSTOMA Lac.

POLYPTERICHTHYS Bleeker.

Polypterichthys Bleeker, Natuurkundig Tijdschrift voor Nederlandsch Indie, vol. iv. p. 608.

Subfamily AULORHYNCHINÆ Gill.

AULORHYNCHUS Gill.

Subfamily SIPHONOSTOMINÆ Gill.

SIPHONOSTOMUS (Klein) Gron.

Fistularia Linn.

Channorhynchus Cantor.

Genus AULORHYNCHUS Gill.

Body moderately elongated and almost cylindrical. Tail from the dorsal and anal fins elongated conical and slightly depressed, merging into the very slender and depressed caudal peduncle. Skin naked. Lateral line marked by a continuous row of short canals. Head with the skin naked. Mouth small, horizontal, and at the end of a flexible tube about as long as the rest of the head. Intermaxillary bones much expanded, and with long and slender posterior processes. Teeth on the supramaxillary and dentary bones nearly uniserial. Palate edentulous. Nostril with raised margin, rather distant from front of eye. Branchiostegal rays 4—4. Dorsal spines numerous, equal and very short, commencing above the pectorals. Dorsal and anal fins posterior, nearly equal, oblong, and elevated in front. Caudal fin small and emarginated. Pectoral fins also emarginated, the superior and inferior rays being longest. Ventral fins inserted not far behind the bases of the pectoral; each with a slender spine and five branched rays.

AULORHYNCHUS FLAVIDUS Gill.

Tawny, minutely punctulated with black above and on the sides, immaculate beneath. Snout with a lateral yellowish line. Operculum and suboperculum with a golden lustre: the former also punctulated above. Ante-pectoral or humeral region lustrous golden, bordered above by a blackish band parallel with the superior pectoral rays.

D. spines xxvi. D. 10. A. I. 10. P. 1, 18, 1. V. I. 5.

The proportions, in hundredths, are as follows:

Total length, 5 inches.....	100
Body—Height of body.....	6
“ behind dorsal.....	4½
Width behind dorsal.....	4½
Head—Length of head.....	25
Distance between snout and preoperculum.....	18
“ “ “ “ orbit.....	12
“ “ orbits.....	3
Height of head.....	5½
Greatest width of head.....	4½
Diameter of eye.....	4
Dorsal—Distance of dorsal fin from snout.....	49
Length of dorsal fin.....	9
Greatest height.....	7

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3 - 7 -
3 50
—
11 50



Caudal—Length of median caudal rays.....	5
“ longest caudal rays.....	6
Pectoral—Length of pectoral fins.....	10
Distance from snout.....	27½
Ventral—Length of ventral fins.....	5
Distance from snout.....	31

A detailed description will be given in the Report on the Ichthyology of the North Western Boundary Survey.

Three specimens of the species were obtained.

A Monograph of the TRINGEÆ of North America.

BY ELLIOTT COUES.

In the latter part of 1860, during the examination at the Smithsonian Institution of an extensive and valuable collection of birds made by Messrs. Robert Kennicott and Bernard R. Ross in the vicinity of Great Slave Lake and McKenzie's River, my attention was directed to a Sandpiper, nearly allied to *Actodromas maculata* and *Bonapartei*, but differing from both in many important features. Subsequent examination having proved it to be without doubt distinct from these, or any other North American Sandpipers, I was authorized by the Secretary of the Institution to describe and name it. To do so properly, necessarily involving a somewhat extended study of the North American Sandpipers, I was induced to undertake a monographic sketch of the section, as well as of the particular genus to which the new species belongs.

In the following pages it has been attempted to present the leading features of the group; to give the diagnosis of the several genera and species, with a detailed description when such appeared necessary; together with the synonymy of each species and a discussion of doubtful points of nomenclature and affinity. In how far, however, this aim has been accomplished, must be left for others to judge.

It is with great diffidence that on some points I dissent from such high authority as that of the author of the *Tringæ* in the General Report; but when compelled to do so, the reasons are fully stated, which, it is hoped, will be found satisfactory.

To Professor Henry, Secretary of the Smithsonian Institution, my grateful acknowledgments are due for the opportunity of examining at leisure the entire Smithsonian collection of Sandpipers, and also for access to those works necessary to the compilation of the list of synonyms. The references have all been personally made and verified, except in a few cases for which the authority is given. Though the list is necessarily incomplete, it is believed that no important synonym is omitted. Should, however, errors be detected in this or in any other portion of the article, it is hoped that they will be found to be others than those of negligence or carelessness.

By many modern ornithologists the Sandpipers are considered as a sub-family *Tringine* of *Scolopacide*, equal in rank to the *Scolopacine* and *Totanine*. But the relationships of the two former in all essential points are very intimate, and the transition from the one to the other, through such genera as *Macroramphus* and *Micropalama*, very gradual, while at the same time the differences from the *Totanine* are marked and decided. In view of these considerations, it may be more natural to consider the Sandpipers as a section of *Tringæ* of equal rank with *Scolopacæ*, uniting both under the subfamily *Scolopacine*. Upon this basis the different groups may be distinguished by the following brief characters, taken chiefly from the General Report.

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Family *SCOLOPACIDÆ*.

Bill variable in length, but at least as long as the head, grooved to beyond the middle. Legs with transverse scutellæ before and behind, (except in *Numenius*.) Toes not broadly margined to the tips, with or without a basal web. Hind toe generally present.

Scelopacinae. Bill covered with soft skin to the sensitive, vascular, usually more or less laterally expanded tip. Gape of mouth very small, not extending beyond the base of the culmen. Bare portion of tibiæ short. Legs generally rather short and stout. Toes usually cleft to the base. Body stout, neck rather short.

Totantinae. Bill covered with soft skin only towards the base, the terminal portion being hard, horny, and usually unexpanded and attenuated. Gape of mouth considerable, extending beyond the base of the culmen. Tibiæ bare for a considerable distance. Legs slender and lengthened. Toes usually with a basal web.

Subfamily *SCOLOPACINÆ*.

Scelopaceæ. Bill much longer than the head or naked leg, extremely sensitive. Upper mandible with a longitudinal furrow near the end, and its tip thickened and bent down over the lower. Roof of mouth not excavated to the tip. External ear beneath or anterior to the eye. Tail usually banded.

Tringæ. Bill shorter than the naked leg, the tip less sensitive than in the preceding, more or less laterally expanded, but not thickened. Roof of mouth excavated to the tip. Culmen without a decided longitudinal groove. External ear posterior to the eye. Tail usually without bands.

The preceding diagnoses indicate, in a general way, the principal characters of the several groups, and distinguish the *Tringæ*. The latter, at least as far as North American forms are concerned, may be thus more definitely characterized.

The bill is straight or slightly decurved, at least as long as the head, and sometimes considerably exceeding it; rather slender, usually more or less compressed, seldom much depressed. The tip is usually more or less expanded, and sensitive and vascular, that of the upper mandible bent a little over that of the lower. The grooves in both mandibles extend to the expansion of the tip; that of the upper is much the widest, but both are deep and distinct. In some genera there are decided indications of a longitudinal furrow on the culmen near the end. The nostrils are linear, pervious, very narrow, situated in the sinus of the upper mandible, usually very near its base, but sometimes considerably advanced. The angle formed by the rami of the lower jaw is very small, the enclosed space being long and narrow, and the groove marking the line of union of the rami usually extending about two-thirds the length of the bill, but sometimes nearly to the tip. The extent of the encroachment of the feathers on the bill varies in the different genera; but, except perhaps in *Ancylocheilus*, it is always greater between the rami than on the sides. The wings are long, pointed and powerful; the first primary is usually the longest, but the second is nearly, sometimes quite, equal to it. The rest are all rapidly graduated. The secondaries are very short and inconspicuous. The edge of the outer vane is obliquely incised at the extremity. The tertials are usually long, slender and tapering, sometimes nearly equaling the primaries in length. The tail is rather short, usually doubly emarginate, the central feathers pointed, and projecting somewhat beyond the others. The legs and feet vary greatly in their character in the different genera, always, however, being constant in each. Except in *Arquatella* and *Tringa*, the tibiæ are always exposed for a considerable portion of the length of the tarsus, and in those genera the bare portion is considerable. Except in *Arquatella*, *Actodromas*, and perhaps *Ereunetes*, the tarsus is always decidedly

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longer than the middle toe and claw. The toes are usually long and slender, more or less margined at the sides, and flattened underneath; free at the base, or with a very rudimentary membrane, except in *Micropalama* and *Ereunetes*. The lateral are nearly equal to the middle, the outer slightly longer than the inner. The hind toe is present, except in *Calidris*. The claws vary considerably in length, acuteness and amount of curvature, but they are always dilated on the inner edge.

With respect to coloration, the *Tringæ* of North America, with scarcely the exception of *Arquatella maritima*, present a general similarity in the pattern and disposal of the markings of most of the parts. The feathers of the upper parts have their centres very dark, and are margined with some shade of reddish, yellowish, or white, the color being deepest on the scapulars. The primaries are uniformly deep dusky, without spots or bars, and are darkest at the tips and on the outer vanes. The shafts of all are white for some portion, usually the central. The secondaries are ashy-gray, bordered to a greater or less extent with white. The central tail feathers are usually considerably darker than the lateral; but neither show any approach towards the transverse bars so universal among the *Scolopacæ* and *Totaniæ*. Any attempt, however, at a generalization of the color of the under parts seems impossible, since, as will be seen in the diagnoses of the species, they are found of very various patterns and colors.

The species inhabiting North America are divisible into eight well-marked genera, among which are comprised nearly all the more important ones, though some, such as *Eurynorhynchus* and *Limicola*, have no representatives. The most extensive of these, *Actodromas*, seems to contain two well-marked groups, at least sub-generically distinct. Each of the others comprises but a single admitted North American species; and of some, such as *Tringa*, *Arquatella*, and *Ancylocheilus*, but one species is at present known. The characters of the most importance among the *Tringæ* seem to lie in the legs. The proportions of tibia, tarsus and middle toe, and their relations to the bill, readily characterize definitely the groups. They are also the most constant, being subject to very little variation in each species. This is as might be expected, from their radical nature, since the most important and essential character in any group should be the least subject to variation. The bill, on the other hand, differs much in length in the same genus or species; it reaches its maximum of variation in *Ereunetes*, and is most constant throughout the genus *Actodromas*. The wings and tail vary somewhat, but within very narrow limits.

The North American genera of *Tringæ* may be readily characterized by the proportions of bill, tarsus and toe, without reference to the tail or wings, though these of course furnish additional characters. The following schedule, in which the characters are purposely made as brief as possible, will serve to define the genera as adopted.

Synopsis of Genera.

A. Toes with a decided basal web.

Bill equal to tarsus, both very long; exposed portion of tibia equal to middle toe, which is not quite two-thirds the tarsus,

Micropalama.

Bill equal to tarsus, both moderate; tibia exposed for two-thirds the middle toe, which nearly equals the tarsus,

Ereunetes.

B. Toes cleft to the base, or with a very rudimentary membrane.

I. Bill longer than the tarsus.

1. Bill straight; tibia moderately or scarcely at all exposed.

Tarsus longer than the middle toe, hind toe present, *Tringa.*

As in *Tringa*; hind toe absent,

Calidris.

Tarsus shorter than the middle toe,

Arquatella.

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2. Bill decurved; tibia much exposed.

Bill compressed; legs long, slender; middle toe
not quite three-fourths the tarsus,

Ancylocheilus.

Bill depressed; legs moderate, stout; middle toe
nearly or about equal to tarsus,

Pelidna.

II. Bill equal to the tarsus.

Tarsus equal to middle toe,

Actodromas.

The most natural succession of the genera appears to be that presented above, viz.: *Micropalama*, *Ereunetes*, *Tringa*, *Calidris*, *Arquatella*, *Ancylocheilus*, *Pelidna*, *Actodromas*. *Micropalama*, in its long, slender, sensitive bill, somewhat furrowed culmen and digital web, seems to form the natural connecting link between *Scolopacæ* and *Tringæ*, through *Macroramphus*. *Ereunetes* is next most closely allied, having also the membrane to the toes; but here the bill and feet are shortened, and have nearly the proportions of *Tringa*, which most naturally succeeds. *Calidris* is in all essentials like *Tringa*, except the absence of the hind toe. In *Arquatella* the bill is sometimes very slightly decurved; in *Ancylocheilus* and *Pelidna* it is successively more so. In the latter the middle toe becomes nearly or quite equal to the tarsus, opening the way for *Actodromas*, where the slender, attenuated bill, and much denuded tarsus, seem to lead directly to the *Totaniæ*.

If so great a subdivision of the *Tringæ* as is here presented be objected to, it is replied that the variations in external form are so great that a single genus, in the modern acceptation of the term, cannot contain them all; and if more than one genus be adopted for those with fully-cleft anterior toes, it is not easy to stop short of the number here adopted. Ornithologists have indeed perceived how unnatural was the association of all the species under *Tringa*, and at different times, some of them very early, names have been proposed for all the groups. As early as 1800, the absence of the hind toe caused *Calidris* to be separated; and, in 1811, the webbed feet of *Ereunetes* were made the grounds of generic distinction. *Pelidna* of Cuvier, instituted in 1817 for the slender-toed smaller Sandpipers, was a further attempt at division; but that genus, as left by its author, still contained species very dissimilar; and, in 1829, *Ancylocheilus* and *Actodromas* were characterized. The great peculiarities of *Tringa himantopus* Bon. caused it, soon after its first discovery, in 1828, to receive subgeneric distinction from *Tringa*. It was not, however, till 1858, that *Arquatella*, a peculiar form, was characterized. But while in other groups, particularly among the smaller land birds, the divisions have been minute and greatly extended, there seems to have been a general reluctance on the part of ornithologists with regard to recognizing these divisions. It may be that in this group Nature allows more external variation in forms very closely allied than is usual; but until this is proved to be the case, it seems necessary, to keep pace with the progress of ornithology, to consider the characters of the different sections as of full generic value.

Having, it is thought, dwelt sufficiently upon the general features of the group, we proceed at once to characterize the different genera and species.

MICROPALAMA Baird.

Hemipalama, Bonaparte, Syn. 1828, 316. Typus *Tringa himantopus*, Bon. nec Bon. Obs. Wils. 1825. (Typus *T. semipalmata*, Wils.)

Micropalama, Baird, Gen. Rep. 1858, 726. Typus *T. himantopus*, Bon.

Char. Bill long, equalling the tarsus, straight or very slightly decurved, slender, very much compressed, tip much expanded and vascular for some distance. Culmen on the terminal half depressed, with two rudimentary, longitudinal furrows. Groove on the lower mandible narrow and indistinct. Wings moderate, pointed, first primary a little the longest. Tail of twelve 1861.]

feathers, short, nearly even or slightly doubly emarginate, the central feathers projecting but little. Legs very long; tarsus equal to the bill; exposed portion of tibia equal to middle toe, which is not quite two-thirds the tarsus. Toes with a decided basal membrane; flattened beneath, but only moderately margined. Hind toe well developed. Body slender; neck long.

A marked and very peculiar genus of Sandpipers, of which the most characteristic feature, in addition to the long compressed bill, is the remarkable elongation of the tibia and tarsus. The former is exposed for fully the length of the middle toe, and is bare for a tenth of an inch or more further. The tibial feathers are very short. The tarsus is nearly a third longer than the middle toe. The basal membrane of the toes, which, though much emarginated, is very considerable and decided, is greatest between the outer and middle toe, where it extends to the first joint. The wings and tail are moderate, and present no special peculiarities.

In the lengthened sensitive bill, basal membrane of the toes, and some other characters, *Micropalama* seems to have a close affinity to *Macroramphus*, and in a measure to connect by means of that genus *Scolopaceæ* and *Tringæ*, possessing, nevertheless, all the distinguishing features of the latter section. Among the *Tringæ* it comes nearest to *Ereunetes*, which has the basal web and the same relative free portion of bill and tarsus. The other characters, however, are widely different.

Hemipalama was proposed by Bonaparte in 1825 as a subgenus for the *Tringa semipalmata* of Wilson, but was subsequently used for the present bird. But as the generic characters are very different, the name cannot be used in this connection. *Micropalama* of Baird has as its type the *T. himantopus* of Bonaparte, and is the name which should be employed.

MICROPALAMA HIMANTOPUS, (Bon.), Baird.—Stilt Sandpiper.

Tringa himantopus, Bonaparte, Ann. N. Y. Lyc. ii. 1826, 157, [*vide Gen. Rep.*]

Lesson, Manual Ornith. 1828, ii. 284. Swainson, F. B. A. 1831, ii. 380.

Bonaparte, Am. Orn. 1833, iv. 89, tab. 25, fig. 3. Audubon, Orn. Biog.

1838, iv. 332, tab. 344; Id. Syn. 1839, 235; Id. Birds Amer. 1842, v. 271,

tab. 334. Giraud, Birds L. I. 1844, 232.

Tringa Douglassii, Swainson, F. B. A. 1831, ii. 379, tab. 66.

Tringa (Hemipalama) Douglassii, Nuttall, Man. Orn. 1834, ii. 141, [cum fig.]

Tringa (Hemipalama) himantopus, Bonaparte, Spec. Comp. 1827, 61; id. Syn.

1828, 316. Nuttall, Man. Orn. 1834, ii. 138.

Tringa (Hemipalama) Audubonii, Nuttall, Man. Orn. 1834, ii. 140, [juv.]

Hemipalama himantopus, Bonaparte, Comp. List. 1838, 49. Dekay, N. Y. F.

1844, 235, tab. 86, fig. 196.

Hemipalama multistriata, "Licht." Gray, Genera, 1849, iii. 578.

Totanus himantopus, Lambeye, Av. Cubae, 1850, 95.

Micropalama himantopus, Baird, Gen. Rep. 1858, 726.

Sp. Char. Bill much longer than the head, very slightly decurved, much compressed; the tip flattened, expanded, punctulate. Wings moderate or rather long, first primary longest, the rest successively more rapidly graduated. Tail rather short, slightly doubly emarginate, the central feathers projecting but little. Legs very long; exposed portion of tibia equal to middle toe, which is two-thirds the tarsus. *Adult in spring.*—Upper parts very dark brownish black, deepest on the scapulars, each feather edged and tipped with white, light yellowish or reddish, which on the scapulars makes two or three deep indentations. A dusky line from bill to eye, and a light one over the latter to the occiput. Auriculars, and a continuous line beneath and in front of the eye, light chestnut red. A broad stripe of bright chestnut on each side of the occiput, confluent on the nape. Rump dusky; upper tail coverts white, transversely barred with wavy lines of deep dusky. Primaries deep dusky, the tips blackish. Tail ashy grey, central feathers scarcely darker, the mar-

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gins of all and a central field along the shaft white. Under parts white, the throat and jugulum streaked, and the other parts thickly and uniformly waved with transverse dusky bars, bordered with light reddish. Bill, legs and feet, dark greenish black. *Young.* Upper parts a uniform light greyish ash, the blackish feathers appearing at intervals; these and the dusky scapulars and wing coverts bordered with white. Upper tail coverts white, scarcely marked with dusky. Primaries as in the adult. Under parts white, the jugulum with an ashy suffusion, and obsoletely streaked. Slight traces of the reddish auriculars. Bill dusky black, legs and feet light greenish yellow.

Length 9.25, extent 16.75, wing 5.1, tail 2.3. Tarsus 1.6, middle toe 1, tibia exposed 1 inch.

Habitat.—North America, east of the Rocky Mountains.

The preceding diagnosis would characterize the species sufficiently well for ordinary purposes; but in view of the uncertainty whether there are not two or more species to be enumerated as inhabitants of North America, a somewhat more extended description may not be considered unnecessary. The following is taken from a very perfect male from Great Slave Lake in spring plumage; and the description of the supposed young is from a specimen from the Red Fork of the Arkansas.

The feathers extend on the lower mandible nearly in the form of a right angle, their upper outline being about parallel with the culmen, to a distance beyond those on the upper equal to half the distance of those between the rami. The crown of the head is blackish, streaked with white and with reddish. An ill-defined light line over the eye commences about half way between the eye and bill, and extends to the occiput, widening posteriorly. There is a dusky line between the eye and bill. The auriculars are light chestnut red, which color extends as a line beneath and before the eye to the white stripe above; interrupted by this, it commences above the stripe and passes over the side of the occiput to the nape, where it is confluent with the one on the opposite side. The hind neck is simply streaked with dusky and whitish. The middle of the back is black, each feather edged and tipped with light yellowish, which encroaches upon the central black in two or three irregular indentations. On the scapulars the edgings are tinged with reddish, and the indentations are more numerous and regular. The long tertials are blackish, evenly edged with chestnut passing into whitish at the tip. All the feathers of the back have a greenish gloss. The secondaries and greater coverts are light ashy edged with white, the lesser coverts darker with light borders. The primaries are dusky, their tips black, the shaft of the first brown passing into white, of the others black passing into brown; the tips of all black. The centre of the rump is dusky, the sides nearly white; the upper tail coverts white with numerous sagittate or wavy bars of deep dusky. The tail is very light ash, the central feathers scarcely darker, all with the margins and a central shaft field white, most of the inner vane of the two outer being white. The under parts are white; the throat very sparsely marked with minute dusky streaks, which on the jugulum are much larger and more numerous; these streaks on the breast change to transverse wavy bars of dusky bordered with reddish, which uniformly cover the whole under parts. These lines are thickest and most distinct on the breast, growing more obsolete in the middle of the belly, and are largest on the sides under the wings, where the reddish margins fill up the space between the bars on the same feather. There is little reddish on the under tail coverts, where the bars become more or less sagittate.

The young is very different from the adult in color, but presents much the same form and size. The upper parts are of a uniform light ashy, the blackish of the adult appearing in irregular patches. These dark feathers, as well as the scapulars, wing coverts and tertials are edged with white, the latter

slightly tinged with reddish. The wings and tail are much as in the adult, the upper tail coverts, however, scarcely barred. The under parts are white; the jugulum, and, to some extent, the sides under the wings with a lighter wash of the color of the back, and with very obsolete streaks of dusky. The under tail coverts laterally are slightly streaked with dusky. There is an indistinct white line over the eye, and a dusky one between the eye and bill. The auriculars show traces of the reddish, but there is none to be perceived on the nape or sides of the occiput. The bill is black, as in the adult, but the legs are very different, being light greenish yellow.

The synonymy of this Sandpiper, in consequence of its very remarkable form and colors, is definite and well determined, though, as will be seen by the list given, various names have been applied to it by different authors. It was first introduced to the scientific world in 1826, by Bonaparte, in the Annals of the N. Y. Lyceum, under the name of *Tringa himantopus*. By the same author it was afterwards placed in his subgenus *Hemipalama*, (subsequently erected into a genus.) The type of this, however, being, as already stated, the *T. semipalmata* of Wilson, the name cannot of course be retained. Nearly all authors who speak of it employ *Hemipalama*, giving it either subgeneric or full generic rank. Lambeye, however, places the bird in *Totanus*, probably with reference to the long legs and the webbing of the toes. *Tringa Douglassii* of Swainson, is undoubtedly the present bird in mature plumage, though the figure indicates a more rufescent state of plumage than I have ever seen. The *Tringa himantopus* "Bon." of the same author, Nuttall, (page 40 of the Manual,) very precipitately "ventures to consider as a distinct species from the preceding" (*T. himantopus*), and names it *Tringa (Hemipalama) Auduboni*, though retaining both the *T. himantopus* Bon. and *Douglassii* Sw. I have little doubt, however, that all three names refer to the same bird, the *Micropalama himantopus* of Baird (General Report, page 726) and of the present article.

EREUNETES Illiger.

Ereunetes, Illiger, Prod. 1811, 262; typus *E. petrificatus*, Ill.

Hemipalama, Bonaparte, Obs. Wils. 1825, 88. Typus *T. semipalmata*, Wils. Nec syn. 1828.

Heteropoda, Nuttall, Man. Orn. 1834, ii. 136. Typus idem. Nec Latreillei, 1804, fide Gen. Rep.

Char. Bill variable, about as long as the head, straight, quite stout, both mandibles deeply grooved to the considerably expanded, sensitive, vascular tip. Wings long, pointed; secondaries deeply obliquely incised; tertials narrow and elongated. Tail moderate, doubly emarginate, the central feathers pointed and projecting. Tarsus rather longer than middle toe, usually about equal to the bill. Bare portion of tibia two-thirds the tarsus. Toes connected by a broad basal web, and broadly margined. Hind toe well developed.

A genus well characterized among the *Tringæ* by the extensive webbing of the toes, a feature by which it may be readily distinguished from all other genera, except *Micropalama*. The other differences, however, from that genus are very great. The bill is much shorter, being about equal to the head, instead of very much longer. The middle toe is nearly equal to the tarsus, and the bare portion of the tibia is much less. The colors are very different. On the other hand *Ereunetes* comes very near to *Tringa*, with which it agrees in almost every particular, except that of the semipalmation of the toes. It appears to form the natural link between *Micropalama* and *Tringa* proper.

According to Cassin, (Gen. Rep. 724,) the genus *Ereunetes* of Illiger, is based upon a bird which has been proved, by actual examination of the type specimen, to be the *Tringa semipalmata*, Wils. *Ereunetes* must therefore supersede *Hemipalama*, Bon., and *Heteropoda*, Nutt., both instituted upon the same type.

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EREUNETES PUSILLUS, (L.) Cassin.—Semipalmated Sandpiper.

Tringa cinclus, Dominicensis minor, Brisson, Ornith. 1760, v. tab. 37, fig. 3, [haud dubiè.]

Tringa pusilla, Linnæus, Syst. Nat. 1766, i. 252, [in præcedentem instituta.] [Nec Meyer.; nec Bechst.; nec Wils.] Gmelin, Syst. Nat. 1788, i. 681. Latham, Ind. Orn. 1790, ii. 737.

? *Tringa pusilla*, Vieillot, Nouv. Dict. 1819, xxxiv. 452.

Ereunetes petrificatus, Illiger, Prod. 1811, 262. Cassin, Gen. Rep. 1858, 724.

Tringa semipalmata, Wilson, Am. Orn. 1813, vii. 131, tab. lxiii. fig. 3; id. Ord. Ed. 1829, iii. 132; id. Brewer, Ed. 1840, 542, fig. 225; ib. Syn. 725. Vieillot, Nouv. Dict. 1819, xxxiv. 462. Swainson, F. B. A. 1831, ii. 381. Audubon, Orn. Biog. v. 1839, 111, tab. 408; id. Syn. 1839, 236; id. Birds. Amer. 1842, v. 277, tab. 336. Giraud, Birds L. I. 1844, 239. Newberry, P. R. R. Surv. 1857, vi. 100.

Tringa (Hemipalama) semipalmata, Bonaparte, Obs. Wils. 1825, num. 212; id. Specc. Comp. 1827, 62.

Hemipalama semipalmata, Lambeye, Av. Cubæ, 1850, 96.

Tringa (Heteropoda) semipalmata, Nuttall, Man. 1834, ii. 136.

Heteropoda semipalmata, Bonaparte, Comp. List, 1838, 49. Dekay, N. Y. Fauna, 1844, 236, tab. 86, fig. 195. Gray, Genera, 1849, iii. 580.

Ereunetes semipalmatus, Cabanis, Schom. Reise. iii. 758, fide Gen. Rep. Bonaparte, Comptes Rend. xliii. 1856, fide Gen. Rep. Cabanis, Journ. fur Orn. 1856, 419, fide Gen. Rep.

? *Heteropoda mauri*, Bonaparte, Comp. List, 1838, 49, fide Gen. Rep.

? *Ereunetes mauri*, Gundlach, Cab. Journ. 1856, 419, fide Gen. Rep.

? *Hemipalama minor*, Lambeye, Av. Cubæ, 1850, 97.

Tringa brevirostris, Spix, Av. Bras. 1825, ii. 76, fide Gen. Rep.

? *Pelidna Brissoni*, Lesson, Man. d'Orn. 1828, ii. 277, [*T. pusillam*, Linn. citat.]

Ereunetes pusillus, Cassin, Proc. Acad. N. S. 1860, xiii. 195.

Sp. char. Bill stout, straight, variable in length, usually about equal to the head, the tip considerably expanded and punctulate. Feathers extending on the base of the bill to a nearly equal distance on both mandibles, their outline straight and vertical; those between the rami reaching but little further. First primary usually longer than the second, the rest equally graduated. Upper tail coverts very long; tail moderate, doubly emarginate, central feathers pointed and projecting. *Adult*.—Upper parts variegated with ashy, pure black, bright chestnut and white, each feather having a terminal black field, and being margined with reddish and tipped with white or ashy. Tertiaries dusky brown, edged with ashy or light chestnut; wing coverts and secondaries dusky ash edged with ashy white. Primaries deep dusky; shaft of the first white, the central portions of the others the same, their bases brown and tips black. Rump and upper tail coverts brownish black, the outer pair of the latter white barred with dusky. Central tail feathers dusky brown, the others light greyish ash scarcely edged with white. Beneath white; the throat and breast slightly rufescent, and with oval or cordate spots of brownish black, most numerous across the breast, and extending sparsely along the sides as shaft lines. Middle of belly and under tail coverts white, mostly immaculate. Bill and feet greenish black.

Length 6·5, wing 3·75, tail 2·1; bill (average) 1 inch; tarsus ·85, toe ·8, tibia, bare, ·50.

Habitat.—Entire temperate North America. Bahai Islands.

The present bird, the single admitted* American representative of a genus

* I am by no means satisfied that but a single species of *Ereunetes* exists in North America. The differences in size, in length and proportions of the tarsus even, and especially in the bill, cause it to seem almost impossible that all the specimens before me are specifically the same. Thus, the difference in the length of the tarsus, between the 1861.]

of such peculiar characters, requires comparison with no other sandpiper. *Actodromas minutilla* has much the same pattern of coloration, and sometimes approaches it in size ; but the other differences are too great to allow of their being confounded.

The bill of this species varies most remarkably in length, the difference being *four-tenths* of an inch ; it is always, however, quite stout. The tibia and tarsus vary somewhat, but within narrow limits. The proportions of the quills vary, but the first is usually longest. The tail is very decidedly doubly emarginate, the difference between the outer and next feather being nearly one-tenth of an inch ; the third is the shortest. The upper tail coverts are very long, as are also the tertials. The winter and immature plumage shows little or none of the reddish, the feathers being mostly ashy with lighter borders. The young in July and August have scarcely any traces of the spots beneath, being almost entirely white, with a light buff wash across the breast. There is also much more white on the margins of the feathers of the upper parts.

With the exception of *Tringa canutus* and *Ancylocheilus subarquata*, there is perhaps no North American Sandpiper which has received such a variety of names as the present. Fortunately, however, the proper name to be employed is now pretty definitely determined. The subject of the generic appellation has already been discussed under *Ereunetes*, and it now only remains to settle the question of the specific denomination. The first notice of the species is in 1760, by Brisson, who, in his *Ornithologia*, describes and figures a *Tringa cinclus Dominicensis minor*, which can be no other than the present bird. The description applies well, and the figure plainly shows the webbing of the toes, a feature entirely peculiar among the smaller *Tringææ*. It was upon this bird that Linnæus, in 1766, based his *Tringa pusilla*, which name being the first applied to the bird in the binomial system, has priority over all others, and must be employed. In 1811, at the time of the founding of the genus *Ereunetes*, of Illiger, that author named the bird *E. petrificatus*. Cassin, in the General Report, though admitting that *T. pusilla*, Linn., is really this species, does not change Illiger's specific appellation, concerning which all doubt is removed by the actual examination of the type specimen. Very recently, however, in the Proceedings of the Philadelphia Academy, he has given the bird as *Ereunetes pusillus*, Cass., the name by which it should be known. In 1813 Wilson named the bird *T. semipalmata*, which designation being a most appropriate one, has been in general use among modern ornithologists, though referred by different authors successively to *Tringa*, *Heteropoda* and *Ereunetes*. The *Pelidna Brissoni*, of Lesson, who quotes *T. pusilla*, Linn., is probably the present bird.

The remarkable variations in size and in the depth of the bill to which this bird is subject, have given rise to several nominal species. The *Hemipalama*

largest and smallest of these, amounts to nearly two-tenths of an inch ; and in length of bill to about *four-tenths*, the latter being more than half the entire length of the shorter bill. The shortest bills appear fully as stout as the longest. These differences do not seem to depend upon locality, being found in specimens from the same region, while specimens from widely separated localities are absolutely identical. Thus, an excessively short-billed bird from Maryland is identical with one from Nebraska, while very large and long-billed specimens from Georgia, Utah and the Pacific coast do not differ appreciably. Specimens, however, from the same locality, and undoubtedly of the same species, exhibit much variation in size, length of bill and tarsus, amount of red or white above, and character of the spots beneath ; so that without a full series of the common Atlantic bird before me, and especially in the uncertainty, if two or more species be admitted, to which one the name *pusilla* belongs, I have preferred to consider them as specifically identical. Still, it would not be surprising if a careful and extended examination of a large series of *Ereunetes* from all localities on the continent should substantiate two or even three good species : *Tringa semipalmata*, of Wilson, *Hemipalama minor*, of Gundlach, and *Heteropoda mauri*, of Bonaparte.

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minor of Gundlach is founded upon shortness of bill as a character; as is also (fide Gen. Rep.) the *Tringa brevirostris* of Spix. By the same authority the *Heteropoda mauri* of Bonaparte is considered as merely a larger race of the present species.

TRINGA Linnæus.

Tringa, Linnæus, Syst. Nat. 1735. Typus *T. canutus*, L. (fide G. R. Gray.)
Calidris, Cuvier, Regne An. 1817, Typus *T. canutus*, L. (Nec. Cuv. 1800, cujus typus *T. arenaria*, i. fide G. R. Gray.)
Canutus, Brehm, 1830, (fide G. R. Gray.)

Char.—Bill about as long as, or rather longer than, the head, straight, stout, somewhat compressed, widening uniformly from the middle to the slightly expanded, rather hard tip; the culmen depressed on the terminal half to the expansion at tip, and obsoletely furrowed. Both mandibles deeply grooved to the tip. Nostrils very large and placed far forward in the upper groove. Feathers extending on the lower mandible much further than on the upper, and nearly as far as those between the rami. Wings long, pointed, first primary decidedly longest. Secondaries moderately incised. Tertials short, broad, and comparatively stiff. Tail rather short, nearly even, the central feathers projecting but little if any. Legs short and very stout; tarsus usually shorter than the bill; longer than the middle toe. Tibial feathers reaching nearly to joint; tibiæ bare for nearly two-thirds the tarsus. Toes very short and stout, free at base, widely margined; outer lateral longer than inner. Hind toe present, well developed. Claws short, stout, blunt, much curved, dilated on the inner edge. Size large, general form stout.

In the above diagnosis I have drawn the characters of the genus so as to include only the type (*canutus*) upon which it was founded. In this acceptation it may be considered as typical of the section, embodying as it does the most characteristic features of the group, and presenting their usual variations; very great in plumage and in the length of the bill, and slight in the proportions of the legs and shape of the wings and tail. The essential characters lie in the stout, moderately long, straight bill, which usually considerably exceeds the tarsus, which latter is much longer than the very short stout toes; the long tibial feathers, long pointed wings, and short nearly even tail. The peculiar proportions of bill and legs is shared by no other Sandpiper, so far as my knowledge extends, except *Calidris*, which is evidently closely allied. This genus, however, is at once distinguished by the marked character of the absence of the hind toe. The affinities of *Ereunetes* have already been adverted to. *Arquatella* presents the next closest relationship, but is well characterized by the extremely abbreviated tarsus, rounded tail, and some other features.

Tringa is among the oldest of genera, having been established by Linnæus in 1735. As usual with old Linnæan genera, it has been used with great latitude, all the species which now compose the section having been included in it. It seems, however, to represent a form from which all others are sufficiently different to require full generic rank. Its synonyms are (fide G. R. Gray) *Calidris* of Cuvier, 1800, (not of 1817, of which the type is *T. arenaria*, L.) and *Canutus* of Brehm, 1830.

North America possesses but a single representative of the genus as restricted. The *Tringa Cooperi* of Baird, which has been referred to it, seems to fall more naturally under *Actodromas*. Its relationships will be found fully discussed under that head.

TRINGA CANUTUS Linnæus.—Red-breasted Sandpiper.

Tringa canutus, Linnæus, Syst. Nat. i. 1766, 251. Latham, Ind. Orn. 1790, ii. 738. Pennant, Arct. Zool. 1785, ii. 473. Gmelin, Syst. Nat. 1788. Pallas, Zoog. Rosso-As. 1811, ii. 197. Temminck, Man. d'Orn. 1820, ii. 627. 1861.]

- Jenyns, Manual, 1835, 213. Bonaparte, Comp. List, 1838, 49. Schinz. Europ. Faun. 1840, i. 326. Macgillivray, Man. Brit. Orn. 1842, ii. 67, Dekay, N. Y. F. 1844, 243, tab. 85, fig. 194, et. tab. 97, fig. 218. Schlegel, Rev. Crit. 1844, 88. Gray, Genera, 1849, iii. 579. Degland, Orn. Eur. 1849, ii. 219. Bonaparte, Rev. Crit. 1850, 185. Parzudaki, Cat. Ois. Eur. 1859, 14. Meyer, Brit. Birds, 1857, v. 67. Cassin, Gen. Rep. 1858, 715. *Tringa ferruginea*, Brunnich, Orn. Bor. 1764, 53. Vieillot, Nouv. Dict. 1819, xxxiv. 466.
- Tringa cinerea*, Brunnich, Orn. Bor. 1764, 53. Latham, Ind. Orn. 1790, ii. 733. Pennant, Arct. Zool. 1785, 474. Gmelin, Syst. Nat. 1788, i. pars ii. 673. Wilson, Am. Orn. 1813, vii. 36, tab. lvii. fig. 2; id. Ord. Ed. 1829, iii. 142; id. Brewer. Ed. 1840, 482, fig. 224; ibid. Syn. 725. Lichtenstein, Verz. 1823, 72. Lesson, Man. d'Orn. 1828, ii. 283. Swainson, F. B. A. 1831, ii. 387. Nuttall, Man. Orn. 1834, ii. 125.
- ?*Tringa australis*, Gmelin, Syst. Nat. 1788, i. pars ii. 679. Latham, Ind. Orn. 1790, ii. 737.
- Tringa naevia*, Gmelin, Syst. Nat. 1788, i. pars ii. 681. Latham, Ind. Orn. 1790, ii. 732. Pennant, Arct. Zool. 1785, ii. 480.
- Tringa grisea*, Gmelin, Syst. Nat. 1788, i. pars. ii. 681. Latham, Ind. Orn. 1790, ii. 733.
- Tringa islandica*, Gmelin, Syst. Nat. 1788, i. pars. ii. 682. Latham, Ind. Orn. 1790, ii. 737. Pennant, Arct. Zool. 1785, ii. 476. Audubon, Orn. Biog. 1838, iv. 130, tab. 315; id. Syn. 1839, 232; id. Birds Amer. 1842, v. 254, tab. 328. Giraud, Birds L. I. 1844, 224. Holboll, Fauna Grœn. 1846, 38. Nilsson, Scand. Faun. 1858, ii. 252.
- Tringa rufa*, Wilson, Am. Orn. 1813, vii. 43, tab. lvii. fig. 5; id. Ord. Ed. 1829, iii. 140; id. Brew. Ed. 1840, 487, fig. 227; ibid. Syn. 725.
- Tringa (Tringa) canutus*, Bonaparte, Cat. Met. 1842, 61.
- Tringa (Tringa) islandica*, Bonaparte, Speech. Comp. 1827, 62.
- Tringa (Tringa) rufa*, Bonaparte, Obs. Wils. 1825, 93.

Sp. Char.—Largest of North American *Tringæ*. Bill stout, straight, rather longer than the head, upper mandible widely and deeply grooved to the expansion at tip. Feathers extending on lower mandible much farther than on upper, and nearly as far as those between the rami. First primary decidedly longest; tail short, nearly even; legs short, stout; tarsus usually shorter than the bill, but much exceeding the middle toe. *Adult in spring.* Upper parts brownish-black, each feather broadly tipped and edged with ashy white, tinged with reddish yellow on the scapulars. Rump dark ash, transversely banded with dusky; upper tail coverts white, with transverse sagittate or crescentic bars of brownish black. Tail greyish ash, edged with ashy white. Outer webs and tips of primaries deep dusky, the inner much lighter. Secondaries and coverts greyish ash, broadly edged and tipped with ashy white. Line over the eye and entire under parts a uniform deep brownish-red, fading into white on the sides posteriorly and the under tail coverts, which latter are marked with sagittate spots of dusky. Legs and feet greenish black. *Young in autumn.* Upper parts a uniform dark ash, or cinereous, each feather tipped with ashy or pure white, and having a sub-terminal edging of dusky black. Indistinct line over the eye, and whole under parts white, more or less tinged with light reddish, and the throat, breast and sides with rather sparse, irregularly disposed lines and spots of dusky, which become transverse waved bars on the latter.

Length 10·5, extent 20·5, wing 6·4, tail 2·7. Bill about 1·4, tarsus 1·2, middle toe 1 inch. Tibia bare ·6.

Habitat.—Atlantic coast of North America; Europe.

This is the largest of the Sandpipers, and, though exceeding all others in the variation of plumage to which it is subject, may yet be easily recognized in all stages by its generic characters, which differ in some marked particulars from those of any other bird of the section. In the above diagnosis are given the

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plumage of the adult and of the young of the first autumn. These represent the two extremes; but birds may be found of every intermediate stage. In respect to form, the bird varies chiefly in the length of the bill and shape of the tail. The bill in adult specimens is always longer than the tarsus, but being dependent somewhat on age, may in young birds be found equal to the tarsus, or even a little shorter. The tail, usually nearly or quite even, is sometimes in immature birds considerably doubly emarginate; the central feathers, however, are never pointed and projecting as in *Actodromas*. As usual among the *Tringæ*, the tarsus and toes do not differ much in length or proportions.

Tringa canutus is mentioned in the very earliest ornithological writings, and, as is usually the case with those species which vary much in plumage, has received a great variety of names. The older authors instituted nominal species on almost every change of plumage which it undergoes; but still, these stages are now so well known, that there is little difficulty in identifying the descriptions. The "grisled" and "freckled" sandpipers of Latham and Gmelin, *T. grisea* and *navia*, as well as, in all probability, the *T. australis*, Gm., are to be referred to intermediate stages of the present bird. But it is the plumage of the first autumn which has given rise to the most firmly established nominal species, the *T. cinerea*, Auct.; it is as different as possible from that of the adult, and at the same time is marked in character and presents but few evidences of immaturity. It is not a little singular that as late as 1813 Wilson should give the bird a new name, (*T. rufa*,) and say that "of this prettily-marked species I can find no description;" there being already at that date no less than seven different appellations for the bird. *Tringa canutus* of Linnæus seems to have priority over all others, and is the name now in general use.

CALIDRIS Cuvier.

Calidris, Cuvier, 1799—1800, (fide G. R. Gray;) 1805, (fide Gen. Rep.) Nec *Calidris*, Cuv. Regn. An. 1817.

Arenaria, Meyer, 1810, (fide G. R. Gray.) Nec Linnæi.

Char.—Bill stout, straight, about equal to the head or tarsus; tip thickened, expanded and rather hard, the culmen just posterior to it somewhat depressed and hollowed. Nostrils situated far forward. Wings long, pointed; tail short, doubly emarginate, central feathers projecting. Tibia bare for two-thirds the length of the tarsus; toes very short and widely margined. Hind toe wanting. (General characters of *Tringa* proper, but without hind toe.)

A genus well marked by the absence of the hind toe, a feature entirely peculiar among *Tringæ*. In other respects it comes nearest to *Tringa* proper, with which it has a very close affinity, the bill, tarsus and toes, as well as the tibia, having much the same proportions. The toes, however, are even shorter, and the tail is doubly emarginate, a feature scarcely seen in *Tringa*. The bill in its short and stout proportions has much the general appearance of that of *Charadrius*, which fact, in connection with absence of the hind toe, has caused the single species of the genus to be referred to the plovers by some of the older authors. In all other respects, however, as well as in general habits, the bird is a true Sandpiper.

According to Gray, *Calidris* of Cuvier, of 1799—1800, is founded upon the *T. arenaria*, L. The name must therefore be employed in the present connection, though in 1817 Cuvier gives *T. canutus*, L. as the type of the genus. *Arenaria* of Meyer, of 1810, based, according to Gray, upon the *T. arenaria*, is preoccupied in Botany, that being the name of an old Linnæan genus of plants.

CALIDRIS ARENARIA Illiger.—Sauderling.

Tringa arenaria, Linnæus, Syst. Nat. 1766, i. 251. Audubon, Orn. Biog. 1839, iii. 231, v. 582; id. Syn. 1839, 237; id. Birds Amer. 1842, v. 287, tab. 338. Schlegel, Rev. Crit. 1846, 90.

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- Trynga tridactyla*, Pallas, Zoog. Rosso-As. 1811, ii. 198.
Charadrius calidris, Linnæus, Syst. Nat. 1766, i. 255. Wilson, Am. Orn. 1813, vii. 68, tab. lix. fig. 4; id. Ord. Ed. 1829, iii. 167; id. Brew. Ed. 1840, 503.
Charadrius rubidus, Gmelin, Syst. Nat. 1788, i. 688. Wilson, Am. Orn. 1813, vii. 129, tab. lxiii. fig. 3; id. Ord. Ed. 1829, iii. 170; id. Brewer. Ed. 1840, 541.
Arenaria vulgaris, Leisler, (fide G. R. Gray.)
Arenaria calidris, Meyer, (fide G. R. Gray.) Degland, Ornith. Europ. 1849, ii. 240. Lambeye, Av. Cubal. 1850, 100.
Calidris arenaria, Illiger, Prod. 1811, 249. Temminck, Manual, ii. 524. Lichtenstein, Verz. 1823, 72. Bonaparte, Obs. Wilson, 1825, v. 105. Swainson, F. B. A. 1831, ii. 366. Nuttall, Manual, 1834, 4. Jenyns, Manual, 1835, 183. Schinz, Eur. Faun. 1840, i. 298. Bonaparte, Comp. List. 1838, 50; id. Catal. Metod. 1842, 61. Macgillivray, Man. Brit. Orn. 1842, 65. Giraud, Birds L. I. 1844, 243. Gray, Genera, 1849, iii. 581. Bonaparte, Revue Crit. 1850, 184. Cassin, U. S. Ast. Exp. 1855, ii. 194; id. Gen. Rep. 1858, 723. Nilsson, Scand. Faun. 1858, ii. 255. Cooper et Suckley, Nat. Hist. Wash. Terr. 1860, 241.
Calidris tringoides, Vieillot, Gal. Ois. 1834, ii. 95, tab. ccxxiv.
Calidris Americana, Brehm, Vog. Deut. 1831, 675, (fide Gen. Rep.)

Sp. Char.—Bill short, stout, straight, the tip much thickened and expanded. Upper mandible widely, lower narrowly but distinctly, grooved. First primary decidedly longest. Tail doubly emarginate, the central feathers pointed and much projecting. Legs moderate, toes very short and widely margined. *Adult in spring.* Entire upper parts and neck all round, variegated with black, light ashy and bright reddish; on the back and scapulars each feather having a central black field, and being broadly margined and tipped with ashy or reddish. Under parts white, immaculate. Outer webs and tips of primaries deep brownish black, inner light ashy. A white spot at base of inner primaries. Secondaries mostly pure white; the outer vanes and part of inner on the latter half dusky. Greater coverts dusky, broadly tipped and narrowly edged with pure white. Rump, upper tail coverts and central tail feathers dusky, tipped and narrowly edged with ashy white; lateral tail feathers very light ash, nearly white. Legs and feet black. *Young in autumn.* No traces of the reddish. Upper parts very light ash, each feather fading into white on the edges, and with a narrow shaft line of dusky. Entire under parts pure white. Scapulars dusky, edged with whitish. Other parts as in the adult.

Length 7.5 to 8, extent 15 to 16; wing 4.9, tail 2.25. Bill about 1 inch, tarsus rather less; middle toe .75.

Habitat.—Temperate North America; South America; Europe.

In the above diagnosis I have given the breeding plumage and that of the young the first autumn; but a more usual winter dress differs from either. There are traces of the reddish on the upper parts generally and on the breast. Each feather above is brownish-black, regularly indented and tipped with ashy white, thus giving to the upper parts the appearance of being evenly mottled. There is a buff tinge on the breast, and also on the tips of the rump feathers. The bend of the wing is nearly as dark as in the adult. At all times the under parts of the bird from the jugulum are pure white.

As stated in the remarks upon the genus, the peculiarities of the form of this bird have caused it to be considered as a *Charadrius* by some of the older authors. Linnæus erred so much as to refer it to that genus in one state of plumage, and to classify it as a Sandpiper in another. Wilson, though retaining the species in *Charadrius*, remarks upon its evident affinity to the latter group. The *Charadrius rubidus* of Gmelin and Wilson represents the adult-breeding plumage, and the *C. calidris* of the same authors, the young bird. But the peculiarities of the bird are so great that it was very early removed from

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both *Tringa* and *Charadrius*, and a genus *Calidris* formed for its reception. In 1811, Illiger called the bird *C. arenaria*, which is the name generally employed by ornithologists since that date. Audubon, however, in all his works retains the species in *Tringa*. I have found but two instances of the use of *Arenaria calidris*, Mey., which are those given in the list of synonyms. *Calidris tringoides* of Vieillot is undoubtedly the present bird, as is also (fide Gen. Rep.) the *C. Americana* of Brehm.

ARQUATELLA Baird.

Arquatella, Baird, Gen. Rep. 1858, 714. Typus *Tringa maritima*, Brünn.

Char.—Bill variable, always longer than the head, straight or slightly decurved, very slender, much compressed, tip scarcely expanded. Groove in lower mandible shallow, sometimes nearly obsolete. Wings long, pointed. Tail moderate, cuneiform. Tibial feathers very long, covering the joint. Tarsus extremely abbreviated, much shorter than the bill or middle toe. Toes very long, broadly margined and flattened beneath. Hind toe very short; claws short and blunt.

In the remarkably abbreviated tarsus, much surpassed by the long toes,—in the lengthened tibial feathers, cuneiform tail and slender compressed bill,—*Arquatella* constitutes perhaps the most marked section of the *Tringæ*, and one well worthy of full generic rank. Indeed it is a little remarkable that it was not earlier separated from the other allied genera. By most authors it has been considered as a true *Tringa*, and placed in close connection with *T. canutus*. Bonaparte, however, gives it as a *Pelidna*, though Cuvier, in establishing that genus, retains it in his *Calidris*, (of 1817 = *Tringa* proper.) Besides its striking peculiarities of form, the colors of the single species is very different from that of any other known Sandpiper. The name *Arquatella* is Pallas's specific appellation of the bird.

ARQUATELLA MARITIMA (Brünn.) Baird.—Purple Sandpiper.

Tringa maritima, Brünnich, Orn. Bor. 1764, 54. Gmelin, Syst. Nat. 1788, i. pars ii. 678. Latham, Ind. Orn. 1796, ii. 731. Pennant, Arct. Zool. 1785, 481. Vieillot, Nouv. Dict. 1819, xxxiv. 471. Temminck, Manual, 1820, ii. 619. Lesson, Manual, 1828, ii. 283. Swainson, F. B. A. 1831, ii. 382. Nuttall, Manual, 1834, ii. 115. Jenyns, Manual, 1835, 211. Audubon, Orn. Biog. 1835, iii. 558, tab. 284; id. Syn. 1839, 233; id. Birds Am. 1842, v. 261, tab. 330. Macgillivray, Man. Brit. Birds, 1842, ii. 67. Schinz, Eur. Faun. 1840, i. 324. Schlegel, Rev. Crit. 1844, 88. Giraud, Birds L. I. 1844, 236. Dekay, N. Y. Fauna, 1844, ii. 237, tab. 87, fig. 98. Hollbol, Fauna Grœn. 1846, 39. Degland, Orn. Eur. 1849, ii. 222. Gray, Genera, 1849, iii. 579. Parzudaki, Cat. Ois. Eur. 1856, 14. Meyer, Brit. Birds. v. 1857, 80. Nilsson, Scand. Faun. 1858, ii. 235.

Pelidna maritima, Bonaparte, Comp. List, 1838, 49; id. Rev. Crit. 1850, 185; id. Cat. Met. 1842, 60.

?*Tringa striata*, Linnæus, Syst. Nat. 1766, i. 245. Latham, Ind. Orn. 1790, ii. 733. Pennant, Arct. Zool. 1785, ii. 472. Gmelin, Syst. Nat. 1788, i. pars ii. 672.

Tringa undata, Brünnich, Orn. Bor. 1764, 55. Latham, Ind. Orn. 1790, ii. 732. Gmelin, Syst. Nat. 1788, i. pars ii. 678. Vieillot, Nouv. Dict. 1819, xxxiv. 470.

Tringa nigricans, Montagu, Linn. Trans. 1796, iv. 40, (fide Gen. Rep.)

Trynga arquatella, Pallas, Zoog. Rosso-As. 1811, ii. 190.

Tringa canadensis, Vieillot, Nouv. Dict. 1819, xxxiv. 453.

Tringa (Arquatella) maritima, Cassin, Gen. Rep. 1858, 717.

Sp. Char.—Form and proportions typical of the genus. *Adult.* Entire upper parts a lustrous very dark bluish or blackish ash, with purple and violet 1861.]

reflections, and each feather with a lighter border. Greater and lesser wing coverts, tertials and scapulars edged and tipped with white. Secondaries mostly white. Primaries deep dusky, the shafts dull white except at tip, where they are black. Upper tail coverts and central tail feathers brownish black with purplish reflections, the outer pair of the former white barred with dusky. Lateral tail feathers light ash. Jugulum and breast bluish ash, each feather of the latter edged with white, and the ash extending along the sides beneath the wings. Rest of under parts white, immaculate. Legs, feet and bill at base light flesh-color; rest of bill greenish black. *Young in September.* Upper parts much the color of the adult, but with each feather broadly edged and tipped with light buff or reddish yellow. Light edging of wing coverts ashy instead of pure white. Under parts everywhere thickly mottled with ash and dusky, deepest on the breast and jugulum.

Length 8 to 9, extent 15 to 16, wing about 5, tail 2.6. Bill above (average) 1.2; tarsus .9; middle toe 1.1; tibia bare .45.

Habitat.—Atlantic coast from Greenland to Florida. Europe.

Except in the very immature plumage given above, this Sandpiper varies but little in color, the difference between adult and young being chiefly in the depth and intensity of the tints. As the bird advances toward maturity, the upper parts become darker and more lustrous, the edgings of the wing coverts and scapulars more conspicuous and better defined. The mottling of the under parts is gradually restricted till it forms the well defined, uniform dark ash of the jugulum and breast, the sides being always sparsely streaked, and the rest of the under parts white, immaculate. The youngest specimens, however, show a very decided greenish or purplish lustre. While the length and proportions of the tibia, tarsus and toes are remarkably constant, the size of the whole bird, and more particularly that of the bill, varies greatly. The difference in the length of the bill of five specimens now before me amounts to three-tenths of an inch, and in that of the whole bird to considerably more than an inch. A specimen from Greenland is the smallest, having the wing four-tenths of an inch shorter than in one from New Hampshire. In this specimen the legs and feet are dusky-green instead of flesh-colored, and the bill is scarcely lighter at base.

Owing to the striking peculiarities of form and color which this species presents, there has been, contrary to what is usually the case with the Sandpipers known to the earlier authors, comparatively little confusion regarding it. As far as I have been able to ascertain, it has been considered as a true *Tringa* by all authors except Bonaparte (who refers it to *Pelidna*) up to the time of the General Report, in which work it is very properly made the type of a distinct genus. Most authors have also adopted the original specific appellation given by Brünnich in 1764; and I have not met with any other name in works published since 1819, in which year it is given as "*Le tringa cendré du Canada, Tringa Canadensis*, Lath." by Vieillot. There can be no doubt with regard to the bird which is referred to under this head; for after a description which applies well to the usual immature plumage, (not that of the very young given in the diagnosis,) the author adds, "*mais ce qui distingue cet oiseau de ceux de son genre, c'est d'avoir les jambes couvertes de plumes jusqu' au talon, et même au-dessous*,"—a feature which exclusively characterizes the *A. maritima*. *Tringa undata* of Brünnich, Gmelin, &c., is considered as the young of this species in the plumage given in the diagnosis, where the light borders of the feathers of the upper parts and the transverse mottling of the lower give to the bird a somewhat wavy appearance. *Tringa striata* of Linnæus, Gmelin, &c., is generally supposed to refer to this species. Pallas gives it as *Trynga arguata*, an appellation from which the generic name is derived.

ANCYLOCHEILUS Kaup.

Erolia, Vieillot, Analyse, 1816, 55; Typus *Scolopax subarquata* Guld., secundum G. R. Gray et Gen. Rep. (*Erolia*, Vieill., Gal. 1834 = *Erolia*.)

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Ancylocheilus, Kaup, Sk. Ent. Eur. Thierw. 1839, 50; Typus *Tringa subarquata*, Temm.

Char.—Bill much longer than the head, slender, compressed, considerably decurved, the tip not expanded, and rather hard. Grooves in both mandibles very narrow, but distinct. Wings long, pointed. Tail very short, nearly even. Legs long, slender; tarsus and tibia both lengthened, the latter exposed for nearly or quite half the length of the former. Toes moderate, slender, slightly margined, the middle one about three-fourths the tarsus.

The essential characters of this well-marked genus lie in the long, slender, decurved bill, with hard unexpanded tip, the long slender legs, and very short, nearly even tail. In addition, it may be stated that the groove in the upper mandible, except just anterior to the nostrils, is very narrow, though deep; the feathers extend between the rami scarcely further than those on the side of the lower mandible, which exceed those on the upper but little; the tip of the bill is pointed and acute; the claws are all very slender and acute. In form this genus approaches nearest to *Pelidna*, from which, however, it is perfectly distinct and easily recognizable. The bill of the latter is much stouter, depressed instead of compressed, and the feathers extend to some distance between the rami of the lower jaw. The tail is longer and deeply doubly emarginate. An important difference is to be found in the legs, in the proportion of the tibia, tarsus and toes. In *Pelidna* the toe is nearly equal to the tarsus, which is considerably more abbreviated than in *Ancylocheilus*. The tibiae appear to be exposed to a less extent.

According to Gray and to the General Report, *Erolia* of Vieillot (Anal. 1816, ut suprâ) is founded upon the present bird. With every disposition to rely upon such authority, in a careful examination of the characters of the genus in in that work and in the *Nouv. Dict.* (1817,) as well as of *Erolia* in the *Galerie*, (1834,) I have been unable to reconcile them with those of the bird now under consideration. In all these works, apparently the most important characters are stated to be the absence of the hind toe, and the presence of a membrane between the outer and middle, neither of which features exist in the *Scolopax subarquata*, Guld. In the *Galerie*, reference is made to the *Nouv. Dict.*, (x. page 409,) where the genus is fully characterized. A portion of the diagnosis is as follows:—"Erolie, *Erolia* Vieill. Genre de l'Ordre des *Echassiers*, et de la famille des *Ægialites*.—trois doigts devant, point derrière; les extérieurs unis à la base par une membrane, l'interne libre. Ce genre ne contient qu'une espèce qui se trouve en Afrique, et dont on ne connoit que la dépouille." It will be seen that the author places the bird ("dont on ne connoit que la dépouille") not only in a different genus, but in a family entirely distinct from the Sandpipers; and the description of "L'Erolie varié, *Erolia variegata*, Vieill., which follows, I cannot identify with any plumage of *Tringa subarquata* with which I am acquainted. It should also be borne in mind that Vieillot (*Nouv. Dict.*, ut infrâ) correctly describes the present bird under the name of "Le tringa cocorli, *T. subarquata*, Temm.," and no reference whatever is made to *Erolia*. Now, it is by no means impossible that *Erolia variegata* may have been positively identified with *T. subarquata* by actual examination of the type specimen, or otherwise; but even in that case I do not think the name should be adopted. The position of *Erolia variegata* in the system is very different from that which *Tringa subarquata* occupies, and the characters of the genus as published to the world are widely at variance with those presented by that bird.

From these considerations therefore I have adopted *Ancylocheilus* of Kaup, (1829,) concerning which there is no doubt.

ANCYLOCHEILUS SUBARQUATA (Guld.) Kaup.—Curlew Sandpiper.

Scolopax subarquata, Guldendaed, Nov. Com. Petrop. 1775, xix. 471, tab. xviii. fide Gen. Rep. Gmelin, Syst. Nat. 1788, i. 658.

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- Scolopax africanus*, Gmelin, Syst. Nat. 1788, i. 655.
Tringa subarquata, Temminck, Man. 1820, ii. 609. Vieillot, Nouv. Dict. xxxiv. 1819, 454. Nuttall, Man. 1834, ii. 104. Jenyns, Man. 1835, 208. Audubon, Orn. Biog. 1835, iii. 444; id. Birds Amer. 1842, v. 269, tab. 333; id. Syn. 1839. Schinz, Eur. Faun. 1840, i. 320. Macgillivray, Man. Brit. Orn. 1842, ii. 71. Giraud, Birds L. I. 1844, 237. Schlegel, Rev. Crit. 1844, 88. Dekay, N. Y. Fauna, 1844, 239, tab. 95, fig. 213. Gray, Genera, 1849, iii. 579. Degland, Orn. Eur. 1849, ii. 225. Meyer, Brit. Birds, 1857, v. 91. Nilsson, Scand. Faun. 1858, ii. 239.
Pelidna subarquata, Bonaparte, Comp. List, 1838, 50; id. Rev. Crit. 1850, 185.
Ancylocheilus subarquata, Kaup, Eur. Thierw. 1829. Parzudaki, Cat. Ois. Eur. 1856, 14.
Numenius subarquata, Bechstein, Nat. Deut. iv. 148, fide Temminck.
Numenius pygmaeus, Bechstein, Nat. Deut. iv. 135, fide Temminck.
Numenius ferrugineus, Meyer, fide Vieillot.
Numenius africanus, Latham, Ind. Orn. 1790, ii. 712.
Erolia variegata, Vieillot, Anal. 1816; id. Nouv. Dict. 1817, x. 409, secundum Gen. Rep. Lesson, Man. 1828, ii. 302.
Erolia varia, Vieillot, Gal. des Ois. 1834, ii. 89, tab. ccxxxi.; (= *Erolia variegata*.)
Falcinellus cursorius, Temminck, fide Parzudaki.
Tringa (Tringa) subarquata, Bonaparte, Specch. Comp. 1827, 62.
Pelidna (Ancylocheilus) subarquata, Bonaparte, Cat. Met. 1842, 60.
Tringa (Erolia) subarquata, Cassin, Gen. Rep. 1858, 718.

Sp. Char.—Form typical of the genus. *Adult.* Crown of head and entire upper parts lustrous greenish black, each feather tipped and deeply indented with bright yellowish red. Wing coverts ashy brown, each feather with a shaft line of dusky and with reddish edging. Primaries deep dusky, their shafts brown at base and black at tip, the central portion nearly white. Upper tail coverts white with broad bars of dusky, and tinged at their extremity with reddish. Tail light greyish with greenish reflections. Sides of the neck and entire under parts uniform deep brownish red. Under tail coverts barred with dusky. Axillars and under wing coverts white. Bill and legs greenish black. *Young in autumn.* Crown of head and back brownish black, with a slight greenish lustre, each feather edged with white or reddish yellow. Rump plain dusky, upper tail coverts white. Wing coverts with broad greyish-white borders. Tail light ashy, edged and tipped with white, the central feathers with a subterminal dusky border in addition. Under parts entirely white, the breast and sides of the neck finely streaked with dusky, the former with a light buff tinge.

Length 8·5, wing 4·9. Bill (average) 1·5. Tarsus 1·3; toe ·9; tibia bare ·7.

Habitat.—"Atlantic coast of United States; rare. Europe, Asia, Africa."
 (Gen. Rep.)

The variations in both plumage and dimensions which this species presents are very great, fully equal to those exhibited by *Tringa canutus*. I have given above the colors of the adult and of the young of the first fall, between which there may be found every gradation, more especially in reference to the red of the under parts, which at different ages appears as mottling of greater or less extent. The species may, however, be easily recognised in every stage of plumage by its generic characters. The single American specimen before me differs from European skins in a shorter stouter bill, in a shorter tarsus and toes, and in a remarkably abbreviated hind toe.

There has been considerable confusion among writers with regard to the synonymy of this species. It has received quite a variety of both generic and specific appellations, and from its many changes of plumage several nominal species have arisen. The bird was first mentioned, in 1775, by Guldendaedt, (Nov. Comm. ut suprâ,) who introduced it under the name of *Scolopax subarquata*. This specific appellation is the one which has been employed by most

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authors. It has been placed in *seven* different genera,—*Scolopax*, *Numenius*, *Tringa*, *Falcinellus*, *Pelidna*, *Ancylocheilus* and (according to Gen. Rep.) *Erolia*. It was probably the long, slender, decurved bill which caused some of the earlier authors to consider it as a *Numenius*. The *Numenius subarquata*, Bechst., or the *Scolopax subarquata*, Gm., is the summer plumage of this species, and the *Numenius Africanus*, Lath., or the *Scolopax Africanus*, Gm., the winter. The *N. ferrugineus*, Mey. is this species, according to Vieillot; and Temminck also gives *N. pygmaeus*, Bechst. as a synonym, considering it as the young before the first moult. The "Red Sandpiper" of Latham and Pennant refers to this species, though in the synonymy the former gives *T. Islandica*, Linn. and *T. ferruginea*, Brünn., both of which names are synonyms of *T. canutus*. The relationships of *Erolia variegata* or *Erolia varia* have already been discussed under the head of *Ancylocheilus*.

PELIDNA Cuvier.

?? *Schaeniclus*, Mœhring, Gen. Av. 1752, 77.

Pelidna, Cuvier, Regne Anim. 1817, 490. Typus *T. cinclus*, L.

Char. Bill stout, much longer than the head or tarsus, decurved, depressed, tip somewhat expanded and punctulate. Grooves in both mandibles very deep and distinct. Wings moderate; tertials long, narrow and flowing. Tail rather long, deeply doubly emarginate, the central feathers projecting. Legs moderate, or rather long. Tarsus but little if any longer than the middle toe. Bare portion of tibia more than half the tarsus. Toes rather long, and narrowly margined.

The essential characters of this genus lie in the long, stout, decurved bill, longer than the head or tarsus, and the tarsus but little longer than the middle toe, approaching in this respect to *Actodromas*, to which, in the doubly emarginate tail and, to some extent, the general pattern of coloration and changes of plumage, it is still more nearly related. Its affinities to *Ancylocheilus*, which are close, will be found discussed under that head. The genus is very variable in the length of its bill, though the legs, as usual among the *Tringæ*, are pretty constant. The colors of the two species of the group are subject to many and great variations dependent upon age and season, which in each have given rise to a second nominal species. In addition to these, minor differences in size and color have been made the grounds of specific distinction by some European writers. With these, however, the present monograph has nothing to do, since, in according to the American bird specific distinction from that of Europe, the intricate and difficult synonymy of the latter is excluded.

The genus *Pelidna*, of Cuvier, (1817), has been employed by different writers in a very unnatural manner to designate the smaller Sandpipers indiscriminately, nearly all the species having been at one time or another included in it, grouped together without the slightest regard to their natural affinities. This is perhaps due in a measure to the very loose manner in which it is characterized by Cuvier, who merely says, in instituting the genus,—"*les Pelidnes ne sont que de petites maubèches, à bec un peu plus long que la tête, et dont les pieds n'ont ni bordures ni palmures.*" The genus has in consequence fallen somewhat into disrepute among later ornithologists, who generally avoid the use of it; but still it must stand for the type upon which it was founded (*T. cinclus*, L.) if no other name has been previously proposed for the same group. *Schaeniclus*, of Mœhring, (1752), is said by some authors to refer to that type; but I can find no characters which restrict it to the *T. cinclus*. The brief diagnosis is as follows: "*Rostrum digitis cum ungue fere æquale. Pes tetradactyla. Membrana dimidium primum articulum inter extimum et medium digitum occupans.*" Now as the bill is not "about equal to the middle toe and claw," but very much longer, and as there is scarcely the rudiment of a membrane between the outer and middle toe, which does not nearly occupy "half the first joint," the only character left which really belongs to the *T. Alpina* is "*pes* 1861.]

tetradactyla," which of course applies equally well to any other Sandpiper except *Calidris arenaria*.

In the uncertainty, therefore, it may be best to use *Pelidna* of Cuvier, which, although loosely characterized, is definitely located by the mentioning of the type upon which it is founded.

PELIDNA AMERICANA (Cass.) Coues.—American Dunlin.

Tringa alpina, Wilson, Am. Orn. 1813, vii. 25, tab. lvi. fig. 2; id. Ord. Ed. 1829, iii. 136; id. Brewer Ed. 1840, 475, fig. 220; (nec Linnæi, nec al. script. Europ.) Swainson, F. B. A. 1831, ii. 383. Nuttall, Manual, 1834, ii. 106. Audubon, Orn. Biog. 1835, iii. 580, tab. 290; id. Syn. 1839, 234; id. Birds Amer. 1842, v. 266, tab. 332. Girard, Birds L. I. 1844, 228. Newberry, P. R. R. Expl. 1857, vi. 100.

Tringa (Tringa) alpina, Bonaparte, Obs. Wils. 1825, v. 92.

Tringa cinclus, Wilson, Am. Orn. 1813, vii. 39, tab. lviii. fig. 3; id. Ord. Ed. 1829, iii. 138; id. Brewer, Ed. 1840, 484, fig. 225; (nec Linnæi, nec al. script. Europ.) Dekay, N. Y. Faun. 1844, 240, tab. 84, fig. 292.

Pelidna cinclus, Bonaparte, Comp. List, 1838, 50.

Tringa alpina, var. *Americana*, Cooper et Suckley, Nat. Hist. Wash. Terr. 1860, 239.

Tringa (Schoeniclus) alpina, var. *Americana*, Cassin, Gen. Rep. 1858, 719.

Sp. char. Larger than *P. alpina*. Bill longer, stouter and more decurved than in the type of the genus. Wings moderate, pointed, first primary decidedly longest. Tail rather long, deeply doubly emarginate, the central feathers projecting, the upper coverts much lengthened. Legs much longer than in *P. alpina*, the tarsus decidedly longer than the middle toe. *Adult in breeding plumage*.—Crown of head and upper parts generally bright chestnut red, the feathers with a central field of black, and on the scapulars with whitish margins. Lesser wing coverts plain greyish ash, each feather with a shaft line of dusky and with a light border; greater broadly tipped with white. Outer vanes and tips of primaries deep dusky, almost black, those of the inner edged with white towards their bases; inner vanes of all light ashy. Secondaries mostly white. Tertials with the rump and upper tail coverts brownish black, with either plain greyish or light reddish edges, the outer pair of the latter mostly white. Central tail feathers brownish black, the rest light greyish ash. Forehead, line over the eye and whole under parts white, the jugulum with numerous longitudinal lines and streaks of brownish black, and the belly with a very broad bar of pure black. Legs, feet and bill black. *Adult in winter, and young*.—Upper parts a uniform dark ash, generally with traces of the reddish on the scapulars, and the feathers with darker shaft lines. White edgings of inner primaries very conspicuous. Jugulum with an ashy suffusion, and with numerous illly defined, blended streaks of dusky. Rest of under parts pure white.

Length 8·5, extent 14·5, wing 4·9, tail 2·3. Bill above 1·6, tarsus 1·1, middle toe ·95, tibia bare, ·6.

Habitat. Continent of North America.

Although it may seem a hazardous undertaking to separate the Dunlins of America and Europe, yet on the authority of that most accurate ornithologist, Mr. Cassin, and from the testimony of numerous specimens from both countries before me, I cannot but come to the conclusion that they are specifically distinct. The uniformly larger size, the disproportionately longer, stouter and more decurved bill, and the invariably longer and differently proportioned legs, are discrepancies which can hardly be allowed to exist in the same species. The constancy of these differences in so notoriously variable a bird as the present, as well as their radical nature, are indications which cannot be neglected. The distinctive characters being entirely those of size and proportion, the comparative measurements of three specimens from each country is subjoined:

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Name.	Length.	Extent.	Wing.	Bill.	Tarsus.	Toe.
<i>Pelidna Americana</i>	8.50*	15.40*	4.70	1.50	1.08	.98
“ “	9.00*	14.00*	5.05	1.74	1.13	1.05
“ “	8.25*		4.65	1.54	1.03	.95
<i>Pelidna alpina</i>	7.90†		4.25	1.40	.90	.90
“ “	8.10†		4.70	1.42	1.02	.88
“ “ (“ <i>Schinzii</i> ,”)...	8.40†		4.50	1.40	.92	.85

* Fresh; on authority of collector. † Of skin; approximate only.

The comparative diagnoses would be briefly as follows:

P. alpina. Length 8 inches. Bill, average, 1.4. Tarsus but little if any longer than middle toe. Length of tarsus and toe 1.75.

P. Americana. Larger; length 8.5 inches. Bill average 1.7; disproportionately longer, stouter, more decurved. Tarsus decidedly longer than the middle toe; legs considerably longer; length of tarsus and toe 2 inches.

Among the specimens from the west coast there appear to be two very decided types. One is that common to the Atlantic coast, in which the bill measures on an average 1.50 of an inch in length, and the wing 4.60. Of the other there are three specimens before me, collected at different times, absolutely identical in size and proportions, and differing greatly both from eastern specimens and all others from the west coast. In these the bill measures 1.72 of an inch, being nearly a fourth of an inch longer than in *P. Americana*; the wing is nearly five inches; the legs are somewhat longer, and the whole bird considerably larger. The differences, indeed, between these specimens and the average of *P. Americana* are nearly if not quite as great as those which separate that latter species from the *alpina*. These facts are of importance, and would seem to point to one of the following considerations:—either the three specimens alluded to belong to a species distinct from the *Americana*, or that they represent one extreme, and *P. alpina*, or more properly *T. Schinzii*, Brehm,* the other of one and the same species, of which *P. Americana* is the intermediate form. I cannot but think, however, that the former supposition is the most probable; for it seems almost impossible in one species there should be such variations, and those too of such a radical nature as are presented by specimens of *Pelidna* from different localities. Thus, to consider a bird in which the bill measures 1.20, the leg 1.75, and the wing 4.40, (as in the smallest specimen of *Pelidna* before me,) as specifically identical with one in which these parts were respectively 1.75, 2.10 and 4.95, would be almost without a parallel in ornithology; while, at the same time, if they be considered distinct, it is impossible to avoid recognizing also the intermediate form. But if, as I think has been pretty conclusively shown, the American bird is distinct from the European, then the west coast specimens above referred to are equally worthy of specific distinction.† Still, with but three specimens before me, I do not venture, in the case of so variable a bird as a Sandpiper, to present it as distinct; but should the above differences be found constant, and showing no graduation towards the *Americana*, I should have no hesitation in so doing. In the event of their proving really distinct, I would propose the name of *Pacifica* as an appropriate one.

* With but a single specimen of *Tringa Schinzii* before me, I am not prepared to express any opinion with reference to its relationships to *Pelidna alpina*. In this paper I consider it as merely a smaller race of the latter, entirely upon the high authority of the General Report.

† In the field notes of the late Dr. C. B. R. Kennerly, I find the opinion expressed that they are distinct; and I am informed by Dr. Geo. Suckley, U. S. A., that he has always doubted the specific identity of the various specimens of *Pelidna* from the west coast. Both of these gentlemen have enjoyed excellent opportunities for observation and comparison, and their opinions should carry with them considerable weight.

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The above remarks are made rather with the view of calling attention to the facts, than as presenting any solution of the problem. The whole subject is one of great interest, and well worthy of extended and careful investigation.

ACTODROMAS, Kaup.

Actodromas, Kaup, Sk. Ent. Eur. 1829, 55; Typus *Tringa minuta*, Leisl.

Char. Bill about equal to the head or tarsus, short, straight, very slender, somewhat compressed, the tip punctulate, scarcely expanded, acute. Grooves on both mandibles very deep, and extending nearly to the tip. Nostrils situated very near the base of the bill. Feathers extending on the lower mandible much beyond those on the upper, and half as far as those between the rami. Wings long, pointed, first primary usually longest; tertials long, slender, flowing. Tail rather long, deeply doubly emarginate, the central feathers much projecting; upper tail coverts moderately long. Tibia bare for more than half the length of the tarsus; the feathers very short, making the exposed portion nearly as great. Tarsus equal to the middle toe. Toes long, slender, very narrowly margined, entirely free at base. (In typical species the jugulum with an ashy or brownish suffusion, thickly streaked; the rump and upper tail coverts with a central blackish field.)

The genus *Actodromas*, of Kaup (1829) includes a well marked and very natural group of Sandpipers, the quite numerous species of which are very closely related both in form and colors. Its type, from which I have drawn the characters in the preceding diagnosis, is the *T. minuta*, Leisl., a European species not occurring in North America, being replaced in that country by the *Tringa Wilsoni* of Nuttall, a very closely allied species, and one with which it has been confounded by some authors. The essential characters of the genus lie in the short, straight, slender bill, which equals the head or tarsus; the long slender toes, the middle equal to the tarsus; the much denuded tibia with its short feathers, and the long, deeply doubly emarginate tail. The peculiar proportions of bill, tarsus and toe are shared by no other Sandpipers, so far as my knowledge extends. The genus is divisible into two well-marked sections: *Actodromas* proper, with the type *T. minuta*, having its characters strictly as above; and *Heteropygia*,* with the *Tringa Bonapartei* as type. The latter differs in the stouter bill, more expanded at tip; in the much less extent of the encroachment of the feathers on the lower mandible; in the longer legs, the tarsus rather exceeding the middle toe; in the entire absence of the brownish or ashy suffusion on the jugulum, and in the white upper tail covers. In this section I have placed the *Tringa Cooperi* of Baird, which is most closely related to the *A. Bonapartei*, and is at any rate an *Actodromas* rather than a true *Tringa*.

The species of the genus now ascertained to inhabit North America are five in number: *A. maculata*, *A. minutilla*, and the new *A. Bairdii*, coming under *Actodromas* proper; *A. Bonapartei* and *A. Cooperi*, which compose the section *Heteropygia*. The three first of these are so nearly alike in colors, that, their form being absolutely identical, size is the chief specific difference. *A. maculata* is much the largest, being about nine inches in length; *A. minutilla* is very small, being less than six inches; while *A. Bairdii* is exactly intermediate between the two, measuring a little over seven inches.

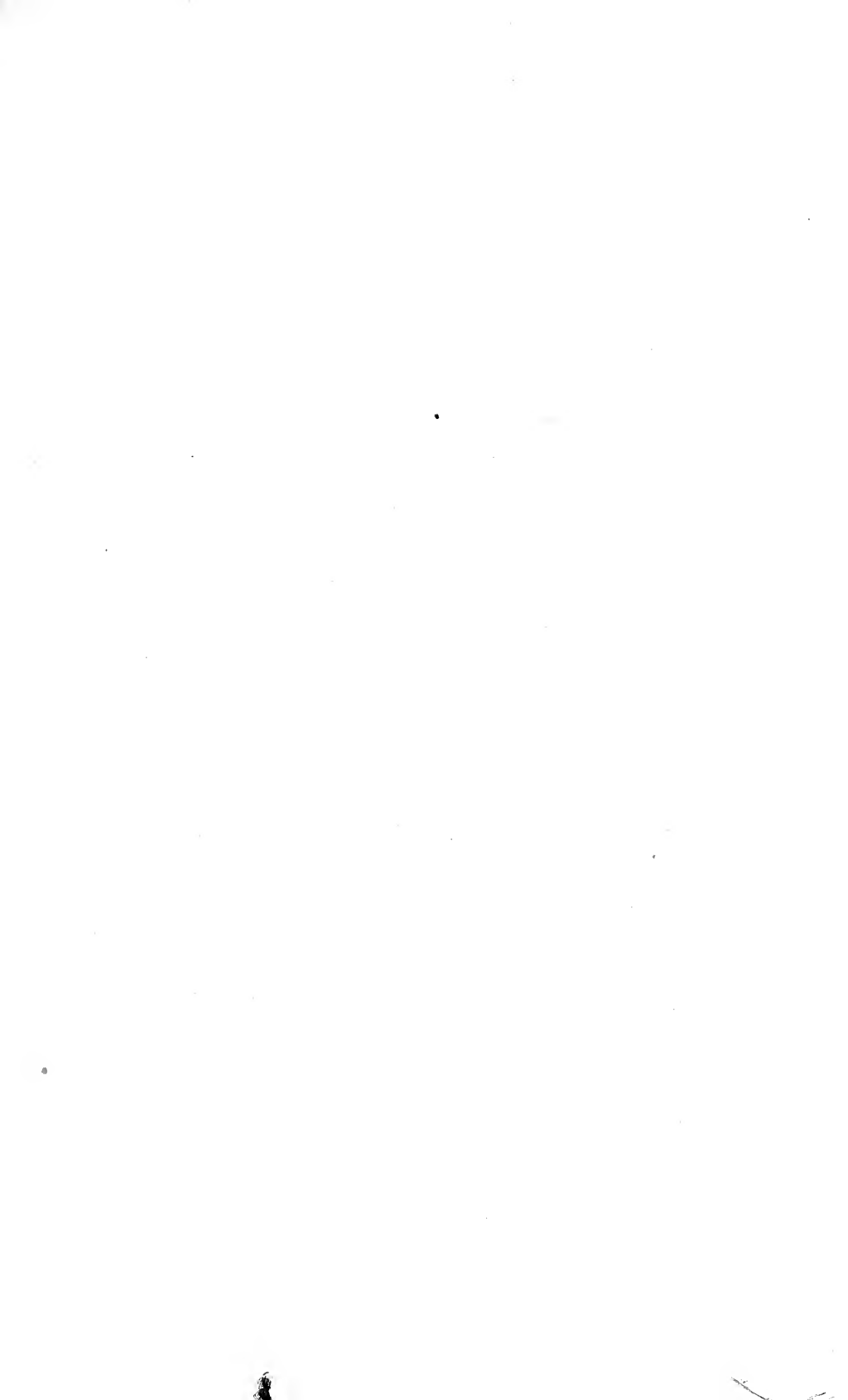
The following brief schedule will serve to distinguish the five species, when in adult breeding plumage:—

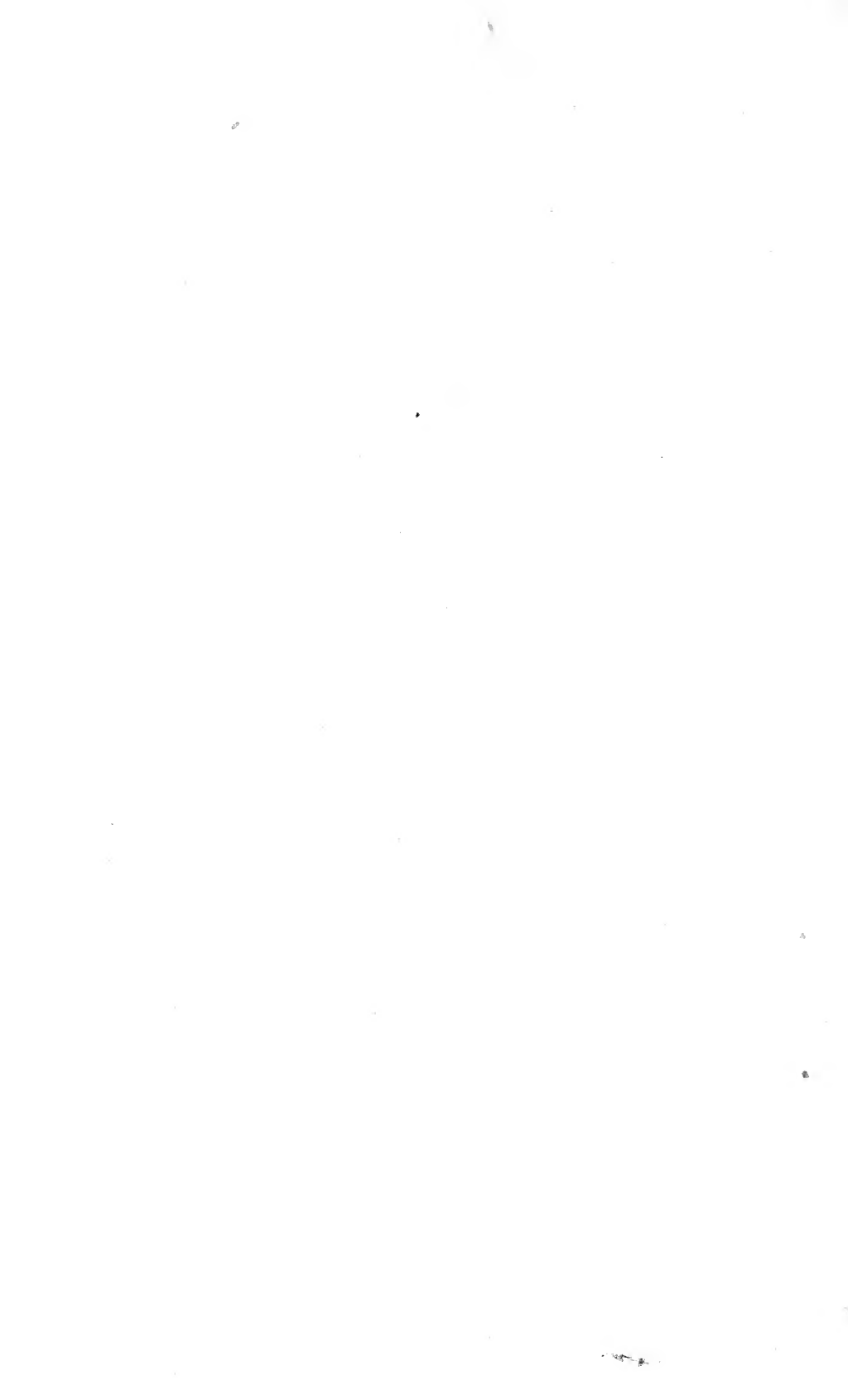
Actodromas, Kaup.

- A. Jugulum with a brownish or ashy suffusion, thickly streaked. Rump and upper tail coverts with a central black field.

* The name is used with reference to the most conspicuous, though probably not most important, feature in which it differs from *Actodromas* proper. The combination being rather an obvious one, the name may have been already employed; in that event I would suggest *Delopygia* with much the same signification.

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1. Much the largest; length about 9 inches, wing (average) 5.25. Crown much darker than the hind neck, the transition abrupt. Chin immaculate. Edgings of feathers on upper parts light chestnut-red, not making indentations towards the shaft. Suffusion on jugulum very deep, the streaks narrow, distinct. Central tail feathers long, pointed, much projecting. Bill and legs dusky green, *maculata*.
2. Smaller; length 7.25 inches, wing 4.8. Crown not conspicuously darker than hind neck. Edgings of feathers on upper parts light reddish yellow, scarcely brighter on the scapulars, making indentations towards the shaft. Suffusion on jugulum very light, the markings rounded, somewhat obsolete. Central tail feathers rounded, less projecting. Bill and legs black, *Bairdii*.
3. Much the smallest; a miniature of the preceding; length 5.75; wing 3.4. Edges of feathers chestnut-red, usually more or less indented, tips lighter. Bill black, legs dusky green, *minutilla*.

Heteropygia, Coues.

- B. Jugulum without an ashy or brownish suffusion. Upper tail coverts white.
4. Length 7.5. Jugulum thickly streaked with rather narrow lines. Upper tail coverts immaculate, except the outer pair. Central tail feathers nearly black, considerably projecting, *Bonapartei*.
 5. Much larger; length 9.5. Jugulum with sparse, rather broad oval spots or streaks. Upper tail coverts with sagittate spots of dusky. Central tail feathers scarcely darker than the lateral, projecting but little, *Cooperi*.

Comparative Measurements of Species.

Name.	Sex.	Length.	Extent.	Wing.	Bill above.	Tarsus	Middle Toe.	Outer Toe.	Coverts to end of tail.	Central Feathers project.
<i>A. maculata</i> .		9.00*		5.35	1.12	1.12	1.12	.90	.80	.52
do.	♀	8.50	16.50	5.00	1.15	1.10	1.12	.92	.80	.40
do.		9.10	18.20	5.55	1.20	1.14	1.14	.92	.90	.42
<i>A. Bairdii</i> .	♂	7.15		4.90	.85	.83	.83	.70	.60	.20
do.		7.25	15.25	4.85	.86	.88	.88	.72	.50	.15
do.	♀	7.25	15.25	4.80	.86	.90	.82	.69	.63	.16
<i>A. minutilla</i> .	♂			3.35	.74	.69	.78	.61	.45	.18
do.		6.00	11.30	3.35	.72	.75	.79	.64	.40	.25
do.	♀	6.00	12.00	3.56	.74	.75	.85	.66	.58	.20
<i>A. Bonapartei</i> .	♂	7.40	15.00	4.70	.94	.98	.95	.80	.80	.29
do.				4.85	.88	.98	.90	.80	.80	.22
do.	♂	7.40	15.10	4.80	.95	.92	.91	.75	.75	.22
<i>A. Cooperi</i> .	♀	9.50		5.75	1.23	1.14	1.08	.95	.85	.15

ACTODROMAS (ACTODROMAS) MINUTILLA (Vieill.) Coues.—Least Sandpiper.

Tringa minutilla, Vieillot, Nouv. Dict. 1819, xxxiv. 452, (haud dubie.) "Vieill." Gray, Genera, 1849, iii. 579.

Tringa pusilla, Wilson, Am. Orn. 1813, v. 32, tab. xxxvii. fig. 4; id. Ord. Ed. 1829, iii. 134; id. Brewer, Ed. 1840, 347, fig. 161. (Nec Linnæi; nec Meyer; nec Bechst.) Swainson, F. B. A. 1831, ii. 386. Audubon, Orn. Biog. 1838, iv. 320, tab. 180; id. Syn. 1839, 237; id. Birds Amer. v. 1842,

*The measurements of the length and extent are from the fresh bird, and on the authority of the collector.

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- 280, tab. 337; Giraud, Birds L. I. 1844, 240. Gray, Genera, 1849, iii. 579.
 Woodhouse, Expl. Zuni. 1853, 100.
Pelidna pusilla, Bonaparte, Comp. List, 1838, 50. Gosse, Birds Jamaica, 1847, 348.
Tringa Wilsoni, Nuttall, Man. 1834, ii. 121. Cooper et Suckley, Nat. Hist. Wash. Terr. 1860, 240.
Tringa (Tringa) pusilla, Bonaparte, Comp. Specch. 1827, 237.
Tringa (Actodromas) Wilsoni, Cassin, Gen. Rep. 1858, 721.

Sp. Char.—The smallest of North American *Tringæ*. Bill straight, very slender, about equal to the tarsus, but varying somewhat, the tip scarcely expanded, and the point very acute. Wings long, first and second primaries about equal, third but little shorter. Tertiaries very long, frequently nearly equalling the primaries. Tail rather long, the central feathers moderately projecting and rather rounded. Middle toe frequently slightly longer than tarsus. Upper parts generally with each feather having a central black field, and being edged with chestnut and tipped with ashy white, the margins making a deep indentation in the middle of the feather. Outer row of tail coverts white, with large, sagittate, dusky spots. Central tail feathers black, edged with light reddish, the others very light ashy with whitish borders. Primaries deep dusky, almost black, the shaft of the first white. Secondaries and greater coverts dusky, lighter on the inner vanes, and tipped with white. An indistinct whitish line over the eye, and a dusky one between the eye and bill. Jugulum and sides to some distance with a very decided brownish suffusion, and thickly marked with rounded spots and streaks of dusky. Chin and under parts generally white, the former usually with minute points of dusky. Legs, feet and bill greenish dusky, the latter nearly black.

Length 5.5 to 6, extent 11.5 to 12, wing 3.4. Bill, tarsus and middle toe about .75.

Habitat.—Entire temperate North America.

The diminutive size of the present species at once distinguishes it from any other Sandpiper now recognised as an inhabitant of North America; but in view of the species of other countries with which it is very closely allied, and especially of the uncertainty whether there be not two or more distinct species in North America, a more minute description may not be considered as unnecessary. In addition, therefore, to the preceding diagnosis, which presents the principal characters of adult individuals, the following remarks may tend to define it with more precision.

In apparently adult specimens, the general style of coloration much more closely resembles that of *Bairdii* than of *maculata*, in the rounded black spots and color of the edgings, as well as in the scolloping at the middle of each feather. Young birds, however, are precisely similar to the *maculata* in the same stage, having the edges of the feathers bright chestnut, and the tips pure white. In this respect the species departs from the general rule with regard to young birds, the plumage at that age being actually brighter than during the breeding season. The same is the case with the *A. maculata*. An evidence of immaturity, however, may always be found in the color of the jugulum, where the wash is simply dull ashy, and the streaks narrow and illy defined. The chin, too, is immaculate, while with the adults it is usually minutely dotted with dusky. The young have the lesser wing coverts broadly margined with light reddish, while the adults have them merely a lighter shade of the color of the rest of the feather. The color of the jugulum is much that of *A. Bairdii*, being of the same decided brownish tint; and the similarity is heightened by the rounded and somewhat obsolete character of the spots. The color of the breast extends along the sides about half way to the tail, but some feathers are marked with dusky quite to the vent. The under tail coverts are usually immaculate, but sometimes have shaft lines of dusky. The primaries are deep dusky, still darker at tip, the shaft of the first being white for its entire length,

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the other having their bases and tips brownish. The secondaries and greater coverts are nearly as dark as the primaries, both conspicuously tipped and their inner vanes edged with white. The axillary feathers are white; and, in the closed wing, a portion of the under coverts form a large triangular patch of white near the shoulder.

A specimen from the west coast presents a very remarkable pattern of coloration. It has not the least trace of any reddish or chestnut, being everywhere of a uniform dark ash, each feather with a central spot or shaft line of dusky. The rump is scarcely darker than the back. The breast is merely a lighter shade of the color of the back, and the streaks are so indistinct as to be scarcely perceptible. This is very different from the plumage of the young given above; and it is not impossible that the bird is of a species distinct from the one now under consideration. The general pattern, however, is very similar to that presented by the young *Bairdii*; and in the absence of any differences of size or proportions, and with but a single specimen before me, I am unwilling to risk adding another name to the already overburdened synonymy of the smaller Sandpipers. In another specimen, also from the west coast, the prevailing color of the upper parts is almost black, the feathers, except on the scapulars, being scarcely edged with reddish; and the streaks on the breast are very numerous and dark, upon a nearly white ground. This state of plumage is exactly parallel with that sometimes exhibited by undoubted specimens of *A. maculata*.

The relationship of this species to the European *A. minuta* are close; and, with but a single very defective and immature skin of the latter before me, I cannot well state the points of difference; but all authors are agreed upon the specific distinction of the two. As far as I can judge, *A. minuta* is considerably the largest, (wing 3.85 instead of about 3.4,) and the proportions of the primaries are quite different from those of *A. minutilla*. *A. minuta* has been given as an inhabitant of North America by both Swainson and Nuttall, but probably upon insufficient or erroneous data.

With regard to this little Sandpiper, there has been considerable confusion among authors, arising partly from the great similarity it bears to some other species, such as the *Tringa minuta* and *Temminckii*, and partly from a misinterpretation of the *T. pusilla** of Linnæus. This name was applied by Wilson, in 1818, to the species now under consideration, and is adopted by Swainson, Audubon and some other writers. The *T. pusilla* of Nuttall ("stint or little sandpiper") is *T. Temminckii*, Leisl., and is erroneously given as an inhabitant of North America. What "Le tringa béco, *T. pusilla*, Lath.," of Vieillot refers to is a little doubtful. The author quotes plate 37, fig. 4 of Wilson's Ornithology, which is *T. pusilla*, Wils. (*T. Wilsoni*, Nutt.;) and also cites the "petite Alouette-de-mer de Saint-Domingue" of Brisson, which is *T. semipalmata*, Wils. (*Ereunetes pusillus*, Cass.) The description, however, especially with reference to the stout bill, traces of reddish on the under parts, &c., seems rather to point to the latter, which it may be best to consider it, even though no mention is

*For convenience of reference, the four species to which the name *pusilla* was originally applied, with their more prominent synonyms, are here inserted.

Tringa pusilla, Linnæus = *Ereunetes petrificatus*, Illiger = *Tringa semipalmata*, Wilson = *Heteropoda semip.*, Nuttall, and *Hemipalama semip.*, Bonaparte = *Ereunetes pusillus*, Cassin; (*Heteropoda mauri*, Bonaparte, and *Hemipalama minor*, Gundlach, are synonymous?)

Tringa pusilla, Meyer = *Tringa minuta*, Leisler = *Actodromas minuta*, Kaup.

Tringa pusilla, Bechstein = *Tringa Temminckii*, Leisler = *Actodromas Temminckii*, Bonaparte.

Tringa pusilla, Wilson = *Tringa minutilla*, Vieillot = *Tringa Wilsoni* Nuttall = *Actodromas Wilsoni*, Cassin = *Actodromas minutilla* of the present article.

It will thus be seen that *Tringa pusilla* of Linnæus, Meyer, Bechstein and Wilson refers to four distinct species.

made of the webbed feet. The remarks made in this article, under the head of *Ereunetes pusillus*, will, it is hoped, show that the name *pusilla* was originally used in a very different connection, and hence cannot be employed for the present species. Bonaparte, as early as 1825, seems to have been aware that the *T. pusilla* of Linnæus was not the bird given under that name by Wilson; for in his Observations on the Nomenclature of Wilson's Ornithology, on the subject of *T. semipalmata*, Wils., he gives as a reason for not adopting *pusilla* for that latter species, that "several species have been confounded together under the name of *T. pusilla*; and although the present (*T. semipalmata*, Wils.) is the real species, it would be adding to the existing confusion to change the most appropriate name of *semipalmata*, given by the author who first separated the species, in order to apply a name generally given to another, to which in that case we ought to give a new name." In 1834, Nuttall applied the name *Wilsoni* to a species whose manners and habits he described so accurately that there can be no doubt of its referring to the bird now under consideration, though he, too, fell into the error of quoting *T. cinclus dominicensis minor*, Briss. This name *Wilsoni* being supposed to be the only one hitherto applied to the species, (except of course *pusilla*, untenable for the reason already given,) is the one in general use among more modern ornithologists. In view of the existing confusion, it is with great reluctance that I adopt still another name for this species; but the *Tringa minutilla* of Vieillot points so unmistakably to the present bird, that a strict adherence to the laws of ornithological nomenclature renders this necessary. This author (page 466 of the Nouv. Dict.) says: "Le nom que j'ai conservé à cet oiseau est celui sous lequel il est connu dans nos colonies d'Amerique, et qui lui a été imposé d'après sa petite taille . . . il a des rapports avec le *tringa minuta* de Leisler . . . je l'ai souvent vu à Halifax, et dans la Nouvelle-Ecosse . . . comme les tringas becos," (*T. semipalmata*, Wils.?) "se comport de même, il en est résulté qu'on les a confondus ensemble." There is no North American Sandpiper but the present remarkable for its diminutive size, and having relationships with the *T. minuta*, Leisl., that is found in Nova Scotia, except the *T. semipalmata*, Wils., with which, as the author remarks,* it is sometimes confounded, from a general similarity in habits and appearance. The description given applies well; and in some particulars, such as the length (quatre pouces dix lignes) and the proportions of the bill, ("noir, très-grêle, et long de neuf legnes; les tarses de la même longueur,") can refer to no other North American Sandpiper.

From these considerations therefore I adopt the name *minutilla*, at least until some weightier reasons be adduced to disprove the position assumed.

ACTODROMAS (ACTODROMAS) BAIRDII Coues.—Baird's Sandpiper.

Tringa (Actodromas) Bonapartei, Cassin, Gen. Rep. 722. In part.

Sp. Char.—Form and proportions typical of the genus. Bill small, slender, rather shorter than the head, equal to the tarsus, the tip scarcely expanded, its point very acute. Grooves in both mandibles very long and deep, that of the lower very narrow. Feathers extending on the side of lower mandible much farther than those on the upper, about half as far as those between the rami. Wings long; first and second primaries about equal, but varying, third much shorter; tertials long, slender, flowing. Tail rather long, but slightly doubly emarginate, the central feathers rounded, projecting but little. Toes long, slender, slightly margined, the middle with its claw about equal to tarsus. *Adult in breeding plumage.* Entire upper parts a very dark brownish black, deeper on the rump and lighter on the neck behind, each feather bordered and tipped with light reddish yellow; on the scapulars the tips broader and nearly pure white, and the margins brighter, making several deep indentations towards

* If, as is probably the case, "le beco" be the *T. semipalmata*, Wils.

the shaft. Upper tail coverts long, extending to within half an inch of the tips of the central tail feathers, black, except the outer series, which are white with dusky markings. Central tail feathers brownish black, the rest successively lighter, and all with a narrow border of white. Jugulum with a very decided light brownish suffusion, (much as in *A. maculata*;) and, together with the sides under the wings to some distance, with rounded obsolete spots and streaks of dusky. Throat and under parts generally white, immaculate. Bill, legs and feet black. *Young in August.* Dimensions and proportions as in the adult. Upper parts a nearly uniform light ashy brown, deeper on the rump, each feather with a central dark field and with a light edge. Traces of the brownish black of the adult on the scapulars. Breast and jugulum with the suffusion very light reddish brown, the streaks sparse and very indistinct.

Length 7.25, extent 15.25, wing 4.9. Bill above, tarsus and middle toe about .85.

Habitat.—North America, east of the Rocky Mountains. Not on the Atlantic coast. (?)

The preceding diagnosis expresses the most essential characters of a Sand-piper, hitherto confounded with the *A. Bonapartei*, but nevertheless perfectly distinct from that or any other species recognized as an inhabitant of North America. Though a true *Actodromas*, and very closely related to the *A. minutilla* and *maculata*, a similarity in size, in changes of plumage, and, to some extent, in general appearance, has caused it to be referred to *A. Bonapartei*, which, however, belongs to a group subgenerically distinct. But the two differ very materially both in tints and in the pattern of coloration of the upper parts, and in the character of the upper tail coverts and the jugulum. The following brief schedule will express the chief distinctive features of each, and render further comparison unnecessary.

A. Bairdii.—Length about 7.25 inches. Bill slender, entirely black. Feathers extending on the lower mandible much beyond those on the upper. Edging of scapulars light buff color, indented. Breast and jugulum with a decided brownish suffusion, the markings rounded, sparse, rather obsolete. Upper tail coverts much lengthened, black; central tail feathers projecting but little, the emargination of the tail slight.

A. Bonapartei.—Length about 7.50 inches. Bill stout, flesh colored at base below. Feathers extending on the lower mandible but little if any beyond those on the upper. Edging of scapulars bright chestnut, scarcely indented. Jugulum and breast with a scarcely appreciable ashy wash, the streaks narrow, numerous, well defined. Upper tail coverts moderate, white; the central tail feathers considerably projecting, and tail quite deeply emarginate.

The species is a true *Actodromas*, and belongs subgenerically to the same group as *A. minutilla* and *maculata*, with both of which it is very closely related, and requires comparison. In size it is exactly intermediate between the two, exceeding the *minutilla* by about as much as it is itself surpassed by the *maculata*. The slender black bill is very similar to that of *minutilla*, and the general pattern of coloration almost identical. The colors, however, are everywhere much lighter; the edgings of the feathers of the upper parts being of a light reddish yellow or buff, instead of the bright chestnut red of *minutilla*; while the streaks upon the breast are fewer, less distinct and more rounded. It is considerably smaller than *A. maculata*; there is nothing of the abrupt transition from the dark crown to the much lighter hind neck, so conspicuous in the latter; the tertials want the bright reddish edgings, and the pattern of coloration of the upper parts are quite different. While the suffusion of the breast and jugulum is much the same, the markings are more rounded, sparse and indistinct. There is also a great difference in the bill, as regards size, shape and color. The species differs from both *minutilla* and *maculata* in one important respect,—the character of the changes of plumage it undergoes. The young of both the former are usually quite as bright, if not brighter, than the adults;

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and the markings are all definite and distinct, while immature birds of the present species are of a nearly uniform ashy above, the suffusion of the breast very light, and the streaks so indistinct as to be scarcely appreciable. In this respect it resembles *A. Bonapartei*, with the different stages of which there is a perfect parallelism. In some stages of plumage it approaches the *A. Cooperi*, the resemblance being further enhanced by the slight emargination of the tail. The greatly superior size of the latter, however, independently of its subgeneric characters, at once distinguishes it. Some specimens show a tendency towards the general dusky state of plumage also exhibited by both *minutilla* and *maculata*, when the upper parts are very dark and nearly uniform, being scarcely relieved by lighter margins of the feathers.

The following detailed description which will serve to definitely characterize this species in the plumage of the adult during the breeding season, and of the young bird of the first fall, is taken from a very perfect male shot May 19th, at Fort Resolution, and from a young male obtained in Nebraska during the latter part of July.

The bill is of moderate length, and very slender, expanded but slightly at tip, and the point very acute; the grooves are long, extending quite to the expansion of the tip, that of the lower mandible being narrow but distinct. The bill is entirely black. The feathers encroach on the lower mandible much beyond those on the upper, about half as far as those between the rami. Their upper outline is about parallel with the culmen. There is much white about the head; the extreme forehead and the lower eyelid are white, while a broad ill-defined band of the same passes over the eye. A narrow and well defined dusky stripe passes from the eye to the nostril. The crown is streaked with dusky brown and dull ochreous, and is darker along a broad medium stripe than at the sides. The sides and back of the neck are much like the crown, but rather lighter, the transition being gradual. The upper parts generally are of a dark brownish black, every feather being edged with light reddish yellow; on the scapulars each feather is broadly bordered with bright buff, still more widely at the end with a dull shade of the same, the extreme tip being white. On most of the feathers the edging makes a deep, more or less irregular indentation, leaving the black only as a line along each side of the shaft. The long tertials, the secondaries, and greater wing coverts are dusky, fading into dull white on the edges. The lesser coverts are very dark, with scarcely lighter tips. The primaries are deep dusky, almost black, the shaft of the first white, of the others mostly brownish. The inner primaries are very narrowly edged on the outer vane with white. The tail coverts are black, the outer series with sagittate spots of white. The central tail feathers which are rounded and project but little beyond the rest, are brownish black, narrowly edged with white; the lateral light ashy, fading into white at the edges. The chin and throat are white, and immaculate or nearly so. The jugulum, breast, and sides to some distance have a very decided light brownish, or ochreous suffusion, and the markings are rather sparse, rounded, and indistinct, in the middle of the breast nearly obsolete. They are largest and most conspicuous just before the bend of the wing, where they gradually pass into the stripes of the sides of the neck. The rest of the under parts including the axillars and under wing coverts are white, immaculate. The tibial feathers are ashy; the legs and feet black.

The young has the form and proportions much as in the adult. The white about the head is much restricted, and the line over the eye so ill defined as to be scarcely appreciable as such. The upper parts generally are of a dull nearly uniform brownish ash, each feather with a shaft line of dusky, and with a lighter tip. There are traces of the brownish black of the adult at intervals, but more particularly on the scapulars, where the edgings are yellowish white. The rump and upper tail coverts are nearly as dark as on the adult. The suffusion of the jugulum and breast is a very light shade of reddish brown;

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and the streaks are sparse, and so indistinct as to be in some places scarcely appreciable. The wash extends for some distance along the sides under the wings.

An intermediate, and perhaps more usual state of plumage during the winter differs in some respects from either of the preceding. The centres of the feathers of the upper parts are nearly as dark as in the adult, but they are every where rather broadly tipped with pure white. In other respects the plumage generally is much like that of the adult, except that, as might be expected, the wash on the jugulum is very light and much restricted, and the streaks very indistinct.

Upon inspection of Audubon's figure of the male of his *Tringa Schinzii*, I was inclined to think that it was taken from a specimen of the present species. It represents a male in the act of flying, and shows plainly the upper tail coverts, which are entirely dark colored, as are also the upper parts generally. In the collection, however, I find a specimen of the true *Bonapartei*, labelled "St. Augustine, Fla.," received from Mr. Audubon, which is in all probability the original of the figure. It is in the peculiar dusky state already mentioned, and agrees very nearly with the plate. His figure of the female is undoubtedly that of a true *Bonapartei*. The fact of his remarking that "In some individuals about six of the middle tail coverts are black, the lateral barred with white and dusky," show that he was acquainted with both species, but considered the differences as dependant upon sex or age. The diagnosis given by Mr. Cassin, in the General Report, of *Tringa Bonapartei*, points unmistakably to that bird; but on the examination of the four specimens there enumerated, I find three of them to be of the present species. The differences were most unaccountably overlooked by that accurate ornithologist, though on a very cursory comparison of the types of the descriptions in the present article, with specimens of *A. Bonapartei*, he pronounced them to be totally distinct.

The first specimen of the present species procured were taken by Dr. Hayden, during the exploration of Nebraska, by Lieut. Warren. There are also specimens in the collection from Fort Kearney, by Dr. Cooper, from the Zuair river, by Dr. Woodhouse, and from the vicinity of Great Slave Lake, by Mr. Kennicott and Mr. Ross. These widely separated localities would seem to indicate a habitat co-extensive with that of *A. Bonapartei*, and probably embracing the continent of North America, east of the Rocky Mountains. I have never seen it, however, from the Atlantic coast.

In presenting to the scientific world this my *first* new species, I should do violence to my feelings, did I give it any other name than the one chosen. To SPENCER F. BAIRD, I dedicate it, as a slight testimonial of respect for scientific acquirements of the highest order, and in grateful remembrance of the unvarying kindness which has rendered my almost daily intercourse a source of so great pleasure, and of the friendly encouragement to which I shall ever feel indebted for whatever progress I may hereafter make in ornithology.

ACTODROMAS (ACTODROMAS) MACULATA (Vie ill.) Cass.—Pectoral Sandpiper.

Tringa maculata, Vieillot, Nouv. Dict. 1819, xxxiv. 465.

Pelidna maculata, Parzudaki, Cat. Ois. Eur. 1856, 15. (*T. Bonapartei*, Schlegel per errorem citat.)

Tringa campestris, Lichtenstein, Verz. 1823, 74; (nec Vieill., 1819.)

Pelidna pectoralis, Say, Long's Exped. 1823, i. 171. Bonaparte, Comp. List. 1838, 50. Cassin, U. S. Ast. Exp. 1855, ii. 195.

Tringa pectoralis, Bonaparte, Am. Orn. 1833, iv. 43; tab. xxiii.; id. Cat. Birds U. S.; id. Syn. sp. 250; (fide Bon.) Nuttall, Manual, 1834, ii. 111. Jenyns, Manual, 1835, 210. Audubon, Orn. Biog. 1835, iii. 601; v. 582; tab. 294; id. Syn. 1839, 232; id. Birds Amer. v. 1842, 259; tab. 329. Macgillivray, Man. Brit. Birds, 1842, ii. 67. Giraud, Birds L. I., 1844, 233. Dekay, N. Y. Faun. 1844, 242, tab. 85, fig. 193. Schlegel, Rev. Crit. Ois. 1861.]

Eur. 1844, 89. Gray, *Genera*, 1849, iii. 579. Lambeye, *Aves Cubæ*, 1850, 98. Woodhouse, *Sitgreave's Expl.* 1853, 100. Meyer, *Brit. Birds*, 1857, v. 89. Cooper et Suckley, *Nat. Hist. Wash. Terr.* 1860, 230.

Tringa Dominicensis, Degland, *Orn. Eur.* 1849, ii. 232.

Tringa (Tringa) pectoralis, Bonaparte, *Spec. Comp.* 1827, 62.

Pelidna (Pelidna) pectoralis, Bonaparte, *Cat. Met.* 1842, 60.

Tringa (Actodromas) maculata, Cassin, *Gen. Rep. Birds*, 1858.

Sp. Ch.—Bill a little longer than the head, about equal to the tarsus or middle toe, moderately stout, straight or very lightly decurved, the tip more expanded and punctulate than in the type of the genus. Grooves in both mandibles long and deep. Wings long, pointed, first primary decidedly longest; tertials very long, narrow, and flowing. Tarsus equal to middle toe, both about equal to the bill. Tail rather long, deeply doubly emarginate, the central feathers pointed and greatly projecting. *Adult in Spring.* An ill-defined white line over the eye, and a more distinct one of dusky between eye and bill. Crown streaked with brownish black and light chestnut, conspicuously different from the neck behind, which is streaked with dusky and light ochreous. Upper parts generally, a very dark brownish black, every feather edged with ashy or dark chestnut red, brightest on the scapulars, the tips usually lighter, and the margins never making deep indentations toward the shaft. Rump and upper tail coverts black, the outer series of the latter white, with sagittate spots of dusky. Primaries deep dusky, almost black, the shaft of the first white, of the others brown. Secondaries and greater coverts dusky, edged and tipped with white. Lesser coverts dusky, fading into light greyish ash on the edges. Central tail feathers brownish black, lighter on the edges, the lateral light ashy margined with white. Jugulum and breast with a deep wash of ashy brown, and with very numerous well defined streaks of dusky; the suffusion extending on the sides under the wings to some distance, where the dusky streaks are mostly shaft lines. Chin, and under parts generally, white, immaculate. Bill and feet dusky greenish. *Young in September.* Edges of the feathers of the upper parts generally, and of the tertials and central tail feathers, light bright chestnut, and the tips pure white. Lesser wing coverts broadly edged and tipped with light ferruginous. Suffusion on the breast and jugulum with a yellowish ochreous tinge not seen in the adult, and the streaks less distinct. Other parts as in the adult.

Length 9 to 9.5 inches, extent about 18, wing (average) 5.5. Bill, tarsus, and middle toe about 1.10.

Habitat.—Entire temperate North America. Europe.

This is the largest of the species of this group inhabiting North America, with the exception of the *A. Cooperi*; and though it is subject to great variations both in size and color, is not easily confounded with any other. The size, the character, and color of the margins of the feathers of the upper parts, the crown conspicuously different from the hind neck, and the deep pectoral wash, readily distinguish it. Its relationships are closest with the *A. Bairdii*, both having the black rump and upper tail coverts, and suffusion on the jugulum. The considerably superior size of the present species, however, at once distinguishes it, independently of the different color and pattern of the markings on the upper parts. In *maculata* the edgings of the feathers are either dull ashy or bright chestnut, and are never of the light reddish yellow of *Bairdii*. There is nothing of the scolloping of the edgings on the scapulars, which in *Bairdii* give the appearance of a rounded black spot on the end of each feather. The emargination of the tail is more than twice as great. The pectoral wash is much deeper, and the streaks more numerous and distinct. The much smaller size, the white upper tail coverts, and absence of a decided pectoral wash of *A. Bonapartei* at once separate that species without further comparison. The similarity in every respect except with regard to size presented by the *A. minutilla* is very great, especially in immature individuals of the latter; but its diminutive size renders

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comparison unnecessary. The differences between the present species and the *A. Cooperi* will be pointed out under the head of the latter.

In addition to the characters given on the diagnosis, the following remarks may serve to illustrate the peculiarities of the present species, with its variations. While the difference in size between the largest and smallest specimens before me is very considerable, amounting to over half an inch in the wing, and more than an inch in entire length, the bill and feet vary but little in length and proportion. The difference in the length of the bill is but about one-tenth of an inch, and of the tarsus and toes it is less. The three are about equal, and from 1.10 to 1.20 of an inch in length. The proportions of the quills seem constant, the first being decidedly longest. The tertials vary quite remarkably in length, in some specimens nearly equalling the longest primary, and in others being over an inch and a half shorter; they usually, however, reach to within less than an inch of the tips of the wings. The feathers, which encroach on the side of the lower mandible but little beyond those on the upper, present an acute angle, their upper outline being parallel with the commissure, and the lower sloping rapidly backward. The crown is much darker than the hind neck, the transition being marked and abrupt. The upper parts vary greatly in the color of the margins of the feathers, it being of every intermediate shade from a very dull ashy with scarcely a tinge of reddish to very bright chestnut. In the latter case, the tips of the feathers are nearly pure white; but this pattern of coloration is mostly confined to the young bird, which, as is also the case with *A. minutilla*, is of actually brighter colors than when adult. An evidence of immaturity is always to be seen in the light ferruginous edgings of the lesser wing coverts, which in the adults are merely light ashy. The same feature characterizes the young *minutilla*, and is also found in the European *A. minuta*. While the pectoral wash is always deep and decided, its color varies considerably. In the adults it is usually a very dark ash, while in the young of the year it has a light ochreous or buff tinge. In the former it fades gradually into the white of the chin, while on the latter it forms a well defined more or less triangular white patch. The line of demarcation on the breast is always sharply defined. In some specimens there are dusky shaft lines along the sides quite to the vent. This species also sometimes exhibits the peculiar dusky state of plumage found in the *minutilla* and *Bairdii*.

Contrary to the general rule among the Sandpipers, there has been very little confusion among authors with regard to this species, and its synonymy is definite and well ascertained. The first notice of it by an American author was in 1823, in Long's expedition to the Rocky Mountains, where it was named *Pelidna pectoralis*, by Say. This specific appellation, certainly a most appropriate one, is that which has been in general use among authors, the bird being as usual referred to both *Pelidna* and *Tringa*. It is, however, very different from either, and is in every essential a true *Actodromas*. "*Le tringa maculé*," *Tringa maculata* of Vieillot, (1819,) unquestionably refers to the present species, and the name has therefore priority over *pectoralis*. Lichtenstein, in 1823, named the species *T. campestris*, which of course is also superseded by *maculata* Vieill. Degland, in 1849, presented the bird as *Tringa dominicensis*, the name being derived from the *T. cinclus dominicensis* of Brisson, (1760.) This author, however, was no binomalist, and has hence no claim to bestow names in such a system.

ACTODROMAS (HETEROPYGIA) BONAPARTEI (Schl.) Cass.—Bonaparte's Sandpiper.

? *Scolopax pusilla*, Gmelin, Syst. Nat. 1788, i. 663.

Pelidna cinclus, var. Say, Long's Exped. 1823, i. 172.

Tringa Schinzii, "Brehm." Bonaparte, Syn. 1828, (nec Brehm. quæ *T. alpina*, var.? fide Gen. Rep.) Swainson, F. B. A. 1831, ii. 384. Bonaparte, Am. Orn. 1833, iv. 69. Nuttall, Manual, 1834, ii. 109. Audubon, Orn. Biog.

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1833, iii. 529, tab. 278; id. Synopsis 1839, 236; id. Birds Amer. 1842, v. 275. Macgillivray, Man. Brit. Orn. 1842, ii. 72. Giraud, Birds L. I. 1844, 241. DeKay, N. Y. F. 1844, 241, tab. 84, fig. 191. Degland, Ornith. Europ. 1849, ii. 231. Lambeye, Aves Cubæ, 1850, 98. ~~Woodhouse, Sitgreave's Exped. 1853, 100.~~ Meyer, Brit. Birds, 1857, v. 96.

Pelidna Schünzi, Bonaparte, Comp. List. 1838, 50; id. Cat. Met. 1842, 60.

Tringa Bonapartei, Schlegel, Rev. Crit. Ois. Eur. 1844, 89.

Tringa (Actodromas) Bonapartei, Cassin, Gen. Rep. 1858, 722.

Sp. char. Bill quite stout, moderately long, equal to the head or tarsus, the tip somewhat expanded. Grooves on both mandibles long and deep. Feathers extending on the lower mandible but little beyond those on the upper. Wings long, pointed, first primary decidedly longest; tertials long, narrow and flowing. Tail moderate, quite deeply doubly emarginate, the central feathers somewhat pointed and considerably projecting. Tarsus rather longer than the middle toe. Toes long, slender and slightly margined. *Adult in breeding plumage.*—Crown and upper parts generally light brownish ash, each feather with a large field of dusky towards its end, and on the crown and middle of the back edged with light yellowish red, deepening into bright sienna on the scapulars. Lesser wing coverts dark brownish ash, fading into light ash on the edges, and with shaft lines of blackish. Secondaries and greater coverts light greyish ash, edged and tipped with white. Tertials very dark brownish ash, fading into light ash on the edges. Primaries deep dusky, their shafts white in the central portions, and the innermost edged with white. Rump brownish black. Upper tail coverts white, their outer series with sagittate spots of dusky. Central tail feathers deep brownish black, the rest very light greyish ash, broadly edged and tipped with white. Jugulum and breast with a scarcely appreciable wash of very light ash, with very numerous, distinct, linear-oblong streaks of dusky brown; these extend as minute dots nearly or quite to the bill, and as narrow shaft lines, along the sides to the vent. Rest of under parts white, immaculate. Lower mandible flesh colored for half its length; rest of bill, with the legs and feet, black. *Young in August.*—Upper parts a nearly uniform dark ash, the black of the adults showing at intervals, but principally on the scapulars, where also the reddish margins of the feathers are apparent. Jugulum and sides under the wings with an ashy suffusion, more conspicuous than in the adult, but much more restricted, and the streaks more obsolete and indistinct. Central pair of upper tail coverts usually dusky. Other parts as in the adult.

Length 7.5, extent 15, wing 4.8 inches. Bill, tarsus and middle toe rather less than one inch.

Habitat.—North America, east of the Rocky Mountains. Europe.

The preceding diagnosis would characterize the species sufficiently well for all ordinary purposes; but in view of the great confusion which exists among authors, most of whom refer it to a very different bird, a somewhat extended account of its markings and variations appears necessary. A very perfect male, in breeding plumage, from Great Slave Lake, and an immature specimen of the same sex, obtained in Labrador during the month of July, are considered as respectively representing the adult and young, and taken as standards of comparison.

Adult.—The bill, which is quite stout, and somewhat expanded at the tip, rather less than an inch in length, and about equal to the head or tarsus. It is pretty constant, the difference in length between the longest and shortest billed specimens before me not exceeding the tenth of an inch. The lower mandible is flesh-colored for nearly half its length. The feathers extend on the side of the lower mandible but little if any beyond those on the upper, and their encroachment between the rami is not great. There is a white stripe over the eye, and a dusky one between the eye and nostrils, but both are very ill defined. The general color of the upper parts is a light brownish ash; but on the back the feathers have such large blackish central fields, and so conspic-

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This citation of Woodhouse refers to Bairdii, testibus
speciminibus ipse examinatis.

ously reddish margins, that the original color is seen only on the rather broad tips of the feathers. On the scapulars the reddish deepens into bright sienna, which borders the feathers evenly, showing little or no disposition towards the scolloping so conspicuous in *Bairdii* and *minutilla*. Some of the scapulars, however, are simply bordered with the prevailing ashy, and all are tipped with it. The long narrow tertials are sooty brown, fading into ashy on the edges. The secondaries and greater coverts are greyish ash, the former much the lighter, both edged and broadly tipped with pure white. The lesser coverts are dusky brown, edged with lighter. The primaries are dusky, nearly black on their outer vanes and at the tips, their shafts brownish at base, gradually fading into pure white, which again darkens with black at the tip. The innermost primaries are quite conspicuously edged with white. The rump is dark sooty brown. The upper tail coverts are white, the outer series with sagittate dusky spots. The central tail feathers are sooty black, with narrow lighter margins; the rest a very clear light ashy, margined and tipped with pure white. The under parts are white; the throat, jugulum and breast with a scarcely appreciable wash of very light ashy, and very thickly streaked with well defined, narrow, linear-oblong marks of brownish black. These streaks, reduced to their minimum, extend as minute points nearly or quite to the bill, and, chiefly as narrow shaft lines, extend along the sides under the wings to the tail coverts, the dusky spots on the upper being the continuation of them. The other under parts are pure white and immaculate. The legs and feet are black.

Young.—The young differs very materially from the adult. The upper parts generally are of a nearly uniform dark greyish ash, the feathers with scarcely lighter margins. The black central fields and the reddish margins soon appear at irregular intervals, giving to the upper parts a more or less variegated appearance. The reddish is seen mostly on the scapulars. The wings and wing coverts are exactly like those of the adults, in this respect showing a remarkable deviation from the usual rule among the species of this genus, where an evidence of immaturity is to be found in the light ferruginous edgings of all the lesser wing coverts.* The central pair of the upper tail coverts are wholly dusky, and, in addition to the sagittate spots on the outer series, the intermediate ones are sometimes marked in the same manner. The wash on the jugulum is considerably more conspicuous than in the adult, but at the same time it is much more restricted, and the streaks are fewer and very indistinct. It extends, however, along the sides much as in the adults. This state of plumage is identical with that exhibited by the *Tringa alpina* at the same age in all respects, except those of the reddish lesser wing coverts and black upper tail coverts of the latter species. Though the adults of the two species are very different, this close resemblance of the young was probably one cause of the two birds being confounded by American writers. Between the plumage of the adult and young, as characterized above, there are to be found birds of every intermediate stage. A specimen shot in the middle of August has already the markings of adult and young in nearly equal proportions, while a winter specimen agrees in almost every respect with the adult in breeding plumage described above. This species is also found in the peculiar dusky state of plumage, where all the features are very dark and scarcely relieved by ashy or reddish margins, already adverted to in the case of *Actodromas maculata*, *Bairdii* and *minutilla*. It is most probable that all the species of the genus are liable to this curious variation.

The relationships of this species are decidedly closest with the *A. Cooperi*, both having clearly the same form, and the pattern of coloration being very similar. The greatly superior size, however, of the latter, independently of the variegated upper tail coverts, different character of the spots beneath, and other

* The same feature is seen in *Pelidna alpina* and *Americana*, a circumstance which would seem to indicate that the two genera are closely allied, as is indeed the case.

features, at once separates it without need of a more extended comparison. The larger size, pectoral wash, and black rump and upper tail coverts of *A. maculata*, at once distinguishes it, while the very diminutive proportions of *A. minutilla* render comparison equally unnecessary. Its relationships to the *A. Bairdii* have already been discussed.

It is a little extraordinary that with regard to so marked and well characterized a Sandpiper as the present, there should have arisen the confusion which until recently has prevailed among authors, nearly all referring it to a very different bird. To use the apt and expressive words of the General Report, it has been "sadly misnamed by American ornithologists." When in mature plumage it bears very little resemblance to the *Tringa Schinzii*, Brehm., which, according to the same authority, is "merely a smaller variety, or perhaps only smaller specimens of the common *Tringa alpina* —." This grave error probably originated from two causes: first, that Say, in his original description (the first notice of the bird by an American writer) designates it as *Pelidna cinclus*, var.; and secondly, that though the adults are as different as possible, the young of the two, as already stated, are nearly identical in plumage, almost the only difference lying in the proportions of the bill and feet; characters which, though important and essential, might readily be overlooked in birds of this group, in which the colors were similar. This similarity in the young and great difference between the adults of the present species and the *Tringa alpina*, var., caused Bonaparte, in his American Ornithology, to fall into a curious error. Under the head of *Tringa Schinzii*, Brehm., he describes the present species accurately, properly quoting the *Pelidna cinclus*, var. of Say; yet only the description of what he considered as the young "*T. Schinzii*" applies to the *A. Bonapartei*. For, speaking of the adult, he says: "This Sandpiper is well known to appear in a summer vesture analogous to that of *Tringa alpina*, at the same season, but we have never met with an American specimen in that state;" and further on he describes adult European specimens as having "the breast almost entirely of a jet black color," clearly referring to the so-called *Tringa Schinzii*, i. e., to the smaller variety of the *T. alpina*. Nuttall, probably following Bonaparte, commits precisely the same mistake. Audubon's *Tringa Schinzii* is undoubtedly the present species, though the measurements given are rather those of *A. Bairdii*; and, for reasons stated elsewhere, I am inclined to think that his figure of the male was taken from an individual in the peculiar abnormal dusky state of plumage already so often adverted to. The descriptions of *Tringa Schinzii* by other American authors, and by those European writers quoted in the list of synonyms, all appear to refer to the true *Bonapartei*.

The description by Schlegel, in 1844, of *Tringa Bonapartei*, unmistakeably points to the present species, and, as it is the first distinctive specific appellation, must be employed. Parzudaki, in his Catalogue, very wrongly gives *Bonapartei*, Sch., as a synonym of *Pelidna maculata*, (*pectoralis* of Say.) *Scolopax pusilla* of Gmelin is in all probability the present bird, as particular mention is made of the white upper tail coverts; but from the brevity of the description, it is impossible to determine this point satisfactorily.

ACTODROMAS (HETEROPYGIA) COOPERI (Baird) Coues.—Cooper's Sandpiper.

Tringa Cooperi, Baird, Gen. Rep. 1858, 716.

Sp. char. Largest of the group. Bill considerably longer than the head, exceeding the tarsus, straight, rather stout, tip scarcely expanded. Feathers extending on side of lower mandible scarcely further than those on the upper. Wings long, pointed, first primary decidedly longest; tertials moderately long and rather slender. Tail moderate, slightly but decidedly doubly emarginate, the central feathers projecting. Tarsus rather longer than the middle toe; tibia bare for half the length of the tarsus; toes all long, slender and slightly margined. *Adult in spring*.—Upper parts a nearly uniform light greyish ash,

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each feather with a central brownish black field, deepening into pure black on the scapulars, where also the edgings of some of the feathers have a reddish tinge. Tertiaries sooty brown, fading with light ash on the edges. Secondaries and greater coverts dark greyish ash, edged and broadly tipped with white. Primaries deep dusky, almost black on the outer vanes and at the tips, the innermost edged with white; shafts of all brown at base and black at tip, the central feathers being white. Upper tail coverts white, with sagittate spots of dusky. Tail feathers ash brown, the central pair darkest. Under parts white; the jugulum, breast, and sides of the neck with a slight reddish tinge, and, together with the sides, with numerous streaks and oval spots of dusky, which become large and V-shaped on the flanks.

Length (of skin) 9.5 inches; wing 5.75, tail 2.80, bill above 1.23, tarsus 1.14 middle toe 1.

Habitat.—Long Island.

In order to exhibit more fully the features and peculiarities of this curious Sandpiper, differing in many essential respects from any other described as North American, the following additional remarks may be required, that we may be better enabled to judge of its relationships and affinities, which are matters of some uncertainty. The characters are taken from the type of the species, the original of the description in the General Report.

The bill and feet though rather stout for an *Actodromas*, are slender in comparison with *Tringa*. The tip of the former is but slightly expanded, and rather obtuse. The grooves in both mandibles are long and distinct, that of the lower being narrow but deep. The position of the nostrils is nearly intermediate between *Tringa* and *Actodromas*. The nature of the encroachment of the feathers on the bill is identical with that of *A. Bonapartei*, and very different from that of *Tringa*. The wings are long and pointed, the first primary much the longest, as in *Tringa canutus*, and the graduation of the others exactly as in that species. The tertiaries are rather long, narrow, and flowing. The emargination of the tail, though not great, is decided; the central feathers project a little beyond the others, but are not much darker than the others; the outer pair are next in length, and the third are the shortest. The legs and feet are long and comparatively slender. The tibiae are long and much denuded, the bare portion being nearly two-thirds the tarsus. The latter is rather shorter than the bill, but at the same time slightly exceeds the middle toe and claw. The toes are all long, slender and slightly margined, and the hind one is well developed. The coloration of the upper parts is very different from that of *T. canutus*, and exceedingly similar to that of *A. Bonapartei*, almost the only difference being a rather less amount of reddish on the back. The rump and upper tail coverts are much the same as in *T. canutus* being white, with sagittate spots and waved bars of dusky. The pattern, and colors of the under parts, though agreeing with *A. Bonapartei* in the absence of a decided pectoral wash, are yet very different, the spots being sparse, and extending over the whole breast, instead of being very numerous and confined strictly to the jugulum and sides. In this respect it approaches the young *Tringa canutus* or still more the adult *Ereunetes pusillus*, the similarity being heightened by the slight reddish tinge on the jugulum.

Having thus presented the chief peculiarities of this very unique Sandpiper, we are prepared to discuss the question of its affinities. Were the size and proportions of bill, tarsus, and toes the same as in the *A. Bonapartei*, it might almost be a question whether it were not an accidental variety of that species; but the discrepancies in these particulars are too great to admit the doubt. The differences from all other species are sufficiently obvious. Granting, then, that it is a distinct bird, it only remains to settle the question of its generic relationships; which, as it presents a most remarkable combination of the characters of both *Tringa* and *Actodromas*, is a matter of some uncertainty. We cannot but think, however, that all the most important characters of the bird incline

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towards *Actodromas*, rather than to *Tringa*, and that *A. Bonapartei* is its nearest ally. While the actual proportions of the bill, tarsus, and toe of *Tringa* are preserved, the difference in length of the bill over the tarsus, and of the latter over the middle toe, is very trifling, and in the latter case, moreover, it is produced by a slight lengthening of the tarsus rather than by any shortening or stoutening of the toes, which are long, slender, and slightly margined as in *Actodromas* proper. The claws are all long, slender, and slightly curved, while exactly the reverse is the case with *Tringa*. The tibiae are bare for a considerably greater extent, and the tibial feathers short. In the adults of *Tringa* these reach nearly to the joint. In the slight (though decided) double emargination of the tail, with its central feathers, but little different from the lateral, and in the pattern of the rump and upper tail coverts, there is shown a near approach to *Tringa*. The primaries are as in *Tringa*, but the elongated tertials are those of *Actodromas*. The stoutness of the bill and the position of the nostrils, are intermediate between the two, but the encroachment of the feathers is exactly that of *A. Bonapartei*. The coloration of the upper parts, except of the rump, is almost identical with that of *Bonapartei*, and that of the lower much nearer to it than to the adult *T. canutus*.

From the above considerations; especially in reference to the indications afforded by the legs, always important among the *Tringæ*, we cannot but conclude that the bird is *Actodromas*, rather than a true *Tringa*. Still we should hardly have ventured to change it from the position assigned by such high authority, had not Prof. Baird, in an attentive reëxamination of the characters of the bird, acquiesced in our views, and expressed his entire approval of the course pursued.

In view of the many peculiarities presented, it might perhaps have been advisable to consider the present bird, instead of the *A. Bonapartei* as typical of *Heteropygia*. But as the two are very closely allied, and both subgenerically distinct from *Actodromas* proper, we have preferred to give the common and well known bird as the type.

The subject of the present article, is, with a single exception, we believe, the only known specimen of this excessively rare species. It is fortunately adult, having been taken in May. The changes of plumage it undergoes, and the extent of the variation to which it is subject, cannot therefore be given. They are, however, in all probability parallel with those of *A. Bonapartei*.

"It is possible that this species may have been previously indicated under some of the names quoted as synonyms, such as *Tringa noveboracensis*, &c., although, from the brevity of the descriptions, it is impossible to determine this point satisfactorily."—(BAIRD.)

Having thus passed in review the species of *Tringæ* well ascertained to inhabit North America, it may be well to notice those attributed by authors to that country. As far as I am able to ascertain they are the following:

ACTODROMAS MINUTA Kaup.

Tringa pusilla, Meyer. (Nec Linn.; nec Bechst.; nec Wils.)

Tringa minuta, Leisler. Swainson, F. B. A. 1831, ii. 385. Nuttall, Manual, 1834, ii. 119.

It is not impossible that this species should occur in North America, or that there should exist a "Pigmy" Sandpiper distinct both from the *A. minutilla* and the European species. Observation, however, does not as yet warrant the belief that such is the case.

ACTODROMAS TEMMINCKII Bon.

Tringa pusilla, Bechstein. (Nec Linn.; nec Meyer; nec Wils.)

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Tringa Temminckii, Leisler.

Leimonites Temminckii, Kaup.

Tringa pusilla, "Linn." Nuttall, Man. ii. 1824, 117. (Nec Linn.)

This species, a specimen of which we have never had the pleasure of examining, is given by Nuttall as an inhabitant of North America, though in all probability upon insufficient or erroneous data.

LIMICOLA PYGMÆA, Koch.

Numenius pygmæus, Latham.

Tringa elorioides, Vieillot, fide Parzudaki.

Tringa platyrhynchos, Temminck. Nuttall, Man. 1834, ii. 114.

This marked and very curious Sandpiper is stated by Nuttall to be "of very rare occurrence in the United States." I have never seen an American specimen, and its existence in that country must be considered as extremely doubtful.

In addition to the above, nearly all the short-billed species of *Totaniinae* were considered by the older authors as *Tringæ*. *Tringa rufescens*, Vieill. of authors, though given as a *Tringa* as late as 1842, by Audubon, is in all essentials a true *Tatler*, and very closely related to *Actiturus*, Bonaparte.

August 6th.

Vice President BRIDGES in the Chair.

Thirteen members present.

The death of Dr. George Spackman, a member, at Philadelphia, on the 3d inst., aged 56, was announced.

On leave granted, the Committees appointed on the papers by Messrs. Abbott, Elliott and Coues, read in July, were permitted to report, and the papers were ordered to be printed in the Proceedings for July.

August 13th.

Dr. LEIDY in the Chair.

Nine members present.

The following papers were presented for publication :

"On three new forms of Rattlesnakes," by Robert Kennicott.

"Notes and Descriptions of Anoles," by E. D. Cope.

"Notes on the Ornithology of Labrador," by Elliott Coues.

August 27th.

Dr. LEIDY in the Chair.

Twelve members present.

On report of the respective Committees, the following papers were ordered to be published in the Proceedings :

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On three new forms of Rattlesnakes.

BY ROBERT KENNICOTT.

Caudisona lepida Kennicott.

Spec. char. Head ovoid, tapering to the nose, which is very narrow, pointed and much depressed. Nostril very small, circular and placed near the point of the nose in about the middle of a single nasal. Two elongated frontals in contact, extending behind the nostrils. Superciliaries and other large plates smooth. Rostral sub-triangular, broader than high, the apex turned back slightly upon the crown. Upper pre-orbital small and separated from the post nasal by the width of two larger plates. Labials rather large, 12 above 10—12 below. Color of head yellowish ash.

Two heads of a rattlesnake from Presidio del Norte and Eagle Pass show such remarkable features as to render it justifiable to describe the species from these alone.

The head is much depressed, the general outline ovoid, tapering regularly from about opposite the angle of the mouth to the nose. The crown is remarkably smooth and the occipital scales very faintly carinated. There are two large frontals elongated laterally and posteriorly, with their inner ends in contact. They are convex on their external, and concave on their internal edges, and extend for nearly half their length back of the nostril. Behind and fitting into the emargination formed by these, are two subquadrangular and smaller plates in contact; immediately behind these is another similar pair. On each side of these two last pairs, at the edge of the crown, between the superciliaries and anterior frontals, is a larger plate. The superciliaries are rather small, and, like the other larger plates quite smooth; the space between the superciliaries is narrow, and filled with irregular rather large scales; the posterior part of the crown is also covered with rather large and smooth scales. The pre-orbitals are remarkable; the lower is, as usual, small and elongated over the pit, but the upper, very small and quadrangular, is separated from the nasal by the length of two plates, each larger than itself. In all the other species the upper pre-orbital is large, more or less elongated and in contact with the post nasal or only separated from it by the width of one smaller plate. The sub-orbital chain is complete, and there is only a single row of scales between it and the labials. The color of the head is uniform yellowish or light brownish ash without any distinct spots or stripes, though each plate is minutely mottled with brownish, and with a few scattering large black dots, and there is very faint indication of the usual posterior facial stripe extending over the angle of the mouth.

The body of this species will doubtless exhibit characters as important as those of the head. It will at once be distinguished from *C. molossus* and *C. tigris* by the single nasal, position of pre-orbitals, number and comparative size of labials, and number of rows between the sub-orbitals and labials, and by the narrow pointed nose instead of the broad blunt snout of *C. molossus* and *C. tigris*. It disagrees also with *C. lucifer* in all of the above characters, excepting the size of labials and the narrow nose, and differs widely from that species in the depressed snout, wide rostral, and perfectly smooth plates and scales on the head. By the smoothness and size of the plates, and absence of the horn, it will at once be distinguished from *C. cerastes*. It will be impossible to confound it with any of the eastern species.

Caudisona atrox Cope. *Var. *Sonoraensis Kennicott.*

Specimens from Sonora and vicinity show some permanent differences from the more eastern types; and, though the differences detected as yet are thought too slight to characterize a distinct species, subsequent researches with the aid of better material will very likely prove the western type to be

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tail, with crescentic marks upon the nape, as in *Varanus giloticus*, and light and dark variegations upon the front and chin, (Smiths. No. 5742½.)

Specimens (adults, No. 5738) in Mus. Smithsonian, from Monte Verde, Cuba, Mr. C. Wright discoverer; also Mus. Acad. Nat. Sciences. This interesting species resembles somewhat the form of *A. (?) carolinensis*, from Cuba. In specimens of that species of very small size the facial rugæ are prominent, the frontal scales much more numerous, and those of the back and belly keeled. The breadth between the orbits greater in *isolepis*, and the auricular aperture smaller. In the oviduct of the female was found a single large egg. Observations upon numerous species of *Anolis*, incline me to adopt the suggestion of Dr. Günther, viz., that but one egg at a time is impregnated and excluded.

Xiphocercus Valenciennii Fitz., Syst. Rept. 1843. *Anolis Valenciennii* Dum. Bibr., Erp. Gen. iv. 131, 1837. *Placopsis ocellata* Gosse, Ann. Mag. N. H. 1850, p. 346. *Anolis leucocephalus* Hall., Proc. A. N. Sci. Phil. 1856, p. 228.

The genus first defined by Mr. Gosse, as above, though previously named by Fitzinger, is to be separated, in our opinion, not so much on account of the size of the plates of the front, but by reason of their curious homology with those of the plate headed *Lacertidæ* and *Scincidæ*, which is readily traced. In the tail, and nature of the dermal covering, it resembles *Eupristis*; in the form of the head it imitates *Anolis iodurus*, and *opalinus* most closely. It is interesting to observe that both these species, and *Eupristis Edwardsii*, *Cope*, inhabit with it the island of Jamaica.

Notes on the Ornithology of Labrador.

BY ELLIOTT COUES.

During the summer of 1860 I accompanied an expedition in charge of J. W. Dodge, Esq., which visited the coast of Labrador, in order to procure for the Smithsonian Institution specimens of the birds to be found there, together with their nests and eggs, and to study their habits during the breeding season. The late period of arrival upon the coast, which was not until the first week in July, prevented any very extensive operations in the department of Oology, while the nature of the localities visited, joined with some circumstances of a private character, rendered the formation of a large collection of birds impracticable. In the following pages, however, are embodied the results of my investigations; and though the list of the species noticed is, from my limited opportunities for observation, necessarily incomplete, it is hoped that it will not be found entirely wanting in points of interest with regard to the habits of the birds which pass the breeding season in Labrador.

A brief notice of the different localities which were visited may not be considered unnecessary. The first point reached was Sloop Harbor, a few miles south of Little Mecattina, where were collected most of the eggs procured during the voyage. Here the *Somateria mollissima* and the *Utamania tarda* were the most abundant and characteristic birds, while the *Larus argentatus*, *Uria grylle*, and *Mergus serrator* were also very numerous, all breeding on the islands in the vicinity. On the 6th of July, the vessel left Sloop Harbor, and, passing the Murre Rocks, where the *Uria lomvia* was breeding in immense numbers, proceeded directly to Esquimaux Bay, where the greater part of the summer was spent. Here were collected most of the land birds procured, among them the new *Aegiothus fuscescens*. *Zonotrichia leucophrys*, and *Anthus ludovicianus* were very abundant; and *Pinicola Canadensis* and *Turdus Alıcıæ* not rare. Grouse and Ptarmigan were also met with; and I was fortunately enabled to examine an extensive breeding place of the *Mormon arcticus* (?).

A few days were spent at Rigolet, a station of the Hudson Bay Company, in 1861.]

charge of Henry Conolly, Esq., from whom were received some valuable meteorological statistics. On the 15th of August the vessel left Esquimaux Bay, and proceeded to Henley Harbor, at the northern entrance to the Straits of Belle-Isle. At that date the smaller waders generally had commenced their southern migration, and during two weeks spent there, which completed my stay on the coast, specimens of most of them were procured.

In the preparation of the following pages, I have not attempted to present the synonymy of the species, nor their diagnoses. To do so would be but to repeat what may be found in full in the General Report on Birds, by Baird, Cassin and Laurence, (vol. ix. P. R. R. Exp. and Surv.) Reference is therefore made to the pages of this work; and also to Audubon's Birds of America, the standard authority on the habits of the birds, where the further history of each species will be found fully elucidated. The names and authorities adopted are strictly those of the General Report, except in a few cases where some change appeared necessary, from the characters of the birds entitling them to full generic rank.

FALCO (HYPOTRIORCHIS) COLUMBARIUS Linn.—Pidgeon Hawk. "Sparrow Hawk."

Falco columbarius, Aud., Birds Amer. vol. i. page 88, pl. 21.

Falco (Hypotriorchis) columbarius, Cassin, Gen. Rep. page 9.

The Pidgeon-hawk I met with on but two occasions. On the 5th of August, while on a small rocky island in Groswater Bay, one was seen circling in the air at a moderate height, and constantly uttering its loud harsh cries; but owing to its watchfulness, I could not secure it. On the 25th of the same month, at Henley Harbor, another individual was seen, foraging among the immense flocks of Curlews, (*Numenius borealis*), which then covered the hills in the vicinity. The Pidgeon-hawk is occasionally stuffed and offered for sale by the natives; and from their accounts I should judge it to be not at all rare. It is known to them as the "Sparrow-hawk," by which name, however, they also designate the *F. sparverius*.

On the return voyage, when more than a hundred miles from any land, a Pidgeon-hawk made its appearance, and after circling about for some time, to select the safest place on which to alight, at length settled on the outermost bowsprit rigging, apparently quite exhausted. Yet even in this worn-out condition so watchful was it, that on my levelling a glass at it, it instantly took flight and disappeared.

FALCO (TINNUNCULUS) SPARVERIUS Linn.—Sparrow Hawk.

Falco sparverius, Aud., Birds Amer. vol. i. p. 90, pl. 22.

Falco (Tinnunculus) sparverius, Cassin, Gen. Rep. p. 13.

But a single individual of this species, so abundant in most portions of the United States, was observed during my stay in Labrador. On the 10th of September, however, while in the Gulf of St. Laurence, off the Isle of Cape Breton, several were seen during the day. They circled quite closely around the vessel, showing but little fear.

? FALCO (HIEROFALCO) ISLANDICUS Gmelin.—Gyr Falcon. "Speckled Hawk."

? *Falco Islandicus*, Aud., Birds Amer. i. 81, pl. 19.

? *Falco (Hierofalco) Islandicus*, Cassin, Gen. Rep. 13.

I had not the good fortune to obtain, or even meet with, either species of Gyr Falcon. The hunters with whom I conversed on the subject, said that they were seldom seen in the summer, but that they become more abundant in the autumn and winter. They were represented as at all times very shy and difficult to procure, frequenting the highest and most inaccessible crags, and subsisting mainly on Grouse and Ptarmigan. I could not, of course, determine from these accounts whether *F. Islandicus* or *candicans* was referred

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to; but the habits of both are probably exceedingly similar, if not identical. They are known to the natives under the name of "Speckled-hawks."

ASTUR ATRICAPILLUS (Wils.) Bon.—Goshawk. "Partridge-hawk."

Astur palumbarius, Aud., Birds Amer. ii. 95, pl. 23.

Astur atricapillus, Cassin, Gen. Rep. 15.

I obtained a single specimen of this hawk, in immature plumage, from a small collection of skins offered for sale by the natives. They know it as the "Partridge-hawk," but further than this I learned nothing respecting it. It does not appear to be abundant.

ARCHIBUTEO SANCTI-JOHHANNIS (Gm.) Gray.—Black-hawk.

Archibuteo Sancti-Johannis, Cassin, Gen. Rep. 33.

While at Puffin Island, on Groswater Bay, I twice saw a large hawk that I supposed to be this species. It was hovering at a great height over the island, and constantly uttered its loud, piercing screams. I was unable to secure this specimen, which was the only one I observed during my stay in Labrador.

AQUILA CANADENSIS (Linn.) Cassin.—Golden Eagle. "Grepe."

Aquila chrysaetos, Aud., Birds Amer. i. 50, pl. 12.

Aquila Canadensis, Cassin, Gen. Rep. 41.

An intelligent hunter, whom I questioned concerning this Eagle, informed me that though he knew it well, it was very rare, and very seldom obtained. His description was so exact, that I had no difficulty in determining that the present species was referred to, and not the *Haliaetus albicilla*, concerning which, though it may be found in Labrador, I could learn nothing. He applied to the *A. Canadensis* the name of "Grepe," or "Greep," the derivation of which word I was unable to ascertain.

BUBO VIRGINIANUS (Gm.) Bon.—Great Horned Owl.

Bubo Virginianus, Aud., Birds Amer. i. 143, pl. 39. Cassin, Gen. Rep. 49.

A single specimen of this bird which I saw at Rigolet, made me aware of its existence in Labrador. I learned nothing of its habits; which, however, in all probability, do not differ materially from those of the more southern bird.

PICOIDES ARCTICUS (Sw.) Gray.—Arctic Three-toed Woodpecker.

Picus arcticus, Aud., Birds Amer. iv. 266, pl. 268.

Picoides arcticus, Baird, Gen. Rep. 98.

I did not myself meet with any individuals of the Three-toed Woodpecker; but I saw a specimen in a collection of skins made by the natives. It is probably not rare in the interior.

CERYLE ALCYON (Linn.) Boie.—Belted Kingfisher.

Alcedo alcyon, Aud., Birds Amer. pl. 77

Ceryle alcyon, Baird, Gen. Rep. 158.

I ascertained the existence of this bird in Labrador, from a single skin in the possession of the natives. They considered it as a rare bird.

TURDUS (TURDUS) ALICIE Baird.—Grey-cheeked Thrush.

Turdus (Turdus) Alicie, Baird, Gen. Rep. 217.

I was not a little surprised to find this species breeding abundantly in Labrador, its habitat being given by its describer as "the Mississippi Region to 1861.]

the Missouri."* On the 24th of July I came upon a family of these birds in a deep thickly wooded ravine. The young were apparently just commencing to fly. Both parents uttered constantly a rather melancholy "pheeugh," in a low whistling tone. The female evinced the greatest anxiety for the safety of her brood, and endeavored to lead me from their vicinity by fluttering from bush to bush; and it was only with some difficulty that I secured both parents. In the course of the same day I saw several of these Thrushes, only, however, among the thickest firs. They all uttered precisely the same note, and were very timid, darting into the most impenetrable thickets, so that it was with great difficulty they could be procured. They appear to be very abundant in Labrador; probably full as much so as the *T. Swainsoni* in most portions of eastern United States.

There are readily appreciable characters by which this species may be distinguished from the closely allied *T. Swainsoni*. The uniformly longer, straighter, and narrower bill is a striking feature. The upper parts are of a much darker shade of olive, as are also the sides under the wings, and the spots on the throat and breast. But the most prominent feature is the entire absence of any buff tinge on the throat and sides of the head and around the eye, so conspicuous in *T. Swainsoni*. The whole bird is also considerably larger.

TURDUS (PLANESTICUS) MIGRATORIUS Linn.—Robin.

Turdus migratorius, Aud., Birds Amer. iii. 121, pl. 142.

Turdus (Planesticus) migratorius, Baird, Gen. Rep. 218.

The Robin, so common and well known throughout the United States, is equally abundant in all well wooded districts in Labrador. Its habits are so familiar to every one, that a detailed account of them would be superfluous. I remarked, however, that they appeared to be shyer than might be expected in a country where they are so seldom molested.

SAXICOLA ANANTHE Bechst.—Stone Chat.

Saxicola ananthe, Baird, Gen. Rep. 220.

? *Saxicola ananthoides*, Vigors, Zool. Voyage Blossom, 1839, 19. Cass. Ill. i. 1854, 208; pl. xxxvi.

I had the good fortune to procure a specimen of this interesting bird, at Henley Harbor, on the 25th of August. The sailor who brought it to me stated that it was in company with two others, but could give no intelligible account of its voice or manners. It was in immature plumage, very different from that of the adult, and was excessively fat.

The North American *Saxicola* has by some authors been considered distinct from the common European *S. ananthe*, under the name of *S. ananthoides*, first applied by Vigors to a bird from the North-west Coast. The author remarks upon its very close affinity to the European bird, and apparently considers the locality as the strongest ground for supposing a specific distinction. The name was subsequently applied by Cassin, in the work above cited, to a bird from Nova Scotia, the larger size and rather different proportions of the tarsus being with this author the most important characters. In a critical comparison of specimens from Europe, Greenland and Labrador, I have been unable to detect any distinctive features beyond those of size, and very slight differences of proportion; which last, however, are not constant, or greater than exist between undoubted specimens of *S. ananthe*. The difference in size is no greater than would be expected from the more northern locality of the bird.

*I have since detected this species at Washington, D. C.; and well characterized specimens have also been obtained in the same locality by my friend, Mr. D. W. Prentiss. This would seem to indicate an eastern range at least equal to that of *T. Swainsoni*, with which it is found associated, in the region west of the Mississippi.



examined. In the table of comparative measurements given below, it will be seen that the specimens from Greenland and Labrador are very nearly of the same dimensions, and also larger than European skins, though the details of bill, tarsus, &c., do not differ materially. It is not impossible that Vigor's bird should be distinct from the *S. ænanthe*, especially as the measurements,* if accurate, would indicate a bird of rather small dimensions for so northern a locality; but at present I cannot but regard the Labrador bird as identical with the European. The question can only be definitely settled by a series of specimens from different localities in both continents.

COMPARATIVE MEASUREMENTS.

No.	Locality.	Age.	Length.	Extent.	Wing.	Tail.	Bill above.	Along Gape.	From Nostril.	Tarsus.	Mid. Toe & Claw.	Hind Toe & Claw.
	Europe,.....	ad.	5·90†		3·73	2·45	·50	·80	·38	1·07	·82	·57
18958	France,.....	yg.	5·50†		3·73	2·30	·52	·79	·40	1·07	·87	·59
20551	Greenland, ..	yg.	6·20†		4·05	2·55	·49	·78	·40	1·10	·85	·58
18075	Labrador, ..	yg.	7·00	12·6	4·05	2·55	·50	·79	·40	1·08	·83	·58

† of Skin.

REGULUS CALUNDULA (L.) Licht.—Ruby-crowned Kinglet.

Regulus calendula, Aud., Birds Amer. ii. 168, pl. 133. Baird, Gen. Rep. 226.

A single specimen, a bird of the year, was obtained at Rigolet, on the 6th of August, shot in a very densely wooded ravine. No other individuals were observed. It is, however, in all probability an abundant bird in Labrador.

ANTHUS LUDOVICIANUS (Gm.) Licht.—Tit-lark.

Anthus Ludovicianus, Aud. Birds Amer. iii. 40; pl. 150. Baird, Gen. Rep. 232.

The Tit-lark I found abundant in every locality in Labrador which I visited, and I had ample opportunities of observing its habits during the breeding season. It is the most numerous of the land birds, with the exception, perhaps, of the white-crowned sparrow, *Zonotrichia leucophrys*. Some of the most rocky and barren islands along the coast are inhabited only by these birds, with perhaps a solitary pair of horned larks, *Eremophila cornuta*. It frequents only open, bare, and exposed situations, such as the coast of Labrador every where affords, and is never found in thickly wooded localities.

Two nests which I obtained, were precisely identical in situation, form and construction. Each was placed on the side of a steep precipitous chasm, in a cavity in the earth of about the size of a child's head, into which a little dried moss had been previously introduced to keep the nest from the damp earth. It was composed entirely of rather coarse dried grasses, very loosely put together, with no lining of any sort. The external diameter was about six inches; the exterior three inches, by two in depth. The eggs were in one instance five, in the other four; their average length, for they varied somewhat, was thirteen-sixteenths of an inch, by nine-and-a-half-sixteenths of an inch in greatest diameter; of a dark chocolate color, indistinctly marked with numerous small lines and streaks of black.

The parent does not leave the nest until nearly trodden upon; then she flutters off with loud cries of distress which soon bring the male, though without attempting to lead the intruder from the nest by feigning lameness, as is the habit of so many birds. The pair together hover over the head of the in-

* Length, $5\frac{1}{3}$; wing, $3\frac{3}{8}$; bill, rectus, $\frac{3}{4}$; tail, $2\frac{1}{4}$; tarsus, 1."

truder, at times approaching within a few feet, and all the while expressing their distress and anxiety by the most plaintive cries, until he withdraws; they even then frequently follow him for some distance. On such occasions several pairs in the vicinity are often attracted to the spot, and join their cries with those of the afflicted parents. Besides these cries, and their usual chirp, these birds have a much lower softer "tsip;" and the males during the breeding season have a very sweet, pleasant song.

The flight of the Tit-lark is performed in an unsteady undulating manner, and is not ordinarily protracted to any great distance. On alighting they rapidly vibrate the tail several times, in the manner of all the *Motacilline*. They seldom or never alight on trees or bushes, but always on the ground, where they walk or run with great ease and rapidity. They are fond of resorting at low tide, to the "land-washes," (as the low muddy flats over which the tide flows are styled in Labrador,) where they run about on the mud and dried "Eel-grass," (*Zostera*), searching for food in company with the smaller Sand-pipers, and very much in the same manner. Though finding an abundance of food, none that I examined were at all fat. They at all times exhibit a heedless familiarity and entire want of fear of man, though the observer may be standing within a few paces. They feed unconcernedly around the doors of the houses; and I have frequently seen them searching for food on the very roofs of the sheds and houses; which, being thatched with brush, and a layer of turf, afford a convenient lurking place for their insect prey.

DENDROICA PINUS (Wils.) Baird.—Pine-creeping Warbler.

Sylvicola pinus, Aud. Birds Amer. ii. 37; pl. 82.

Dendroica pinus, Baird, Gen. Rep. 277.

This, and the succeeding species were the only *Dendroicas* met with in Labrador. The single specimen of the Pine-creeping obtained was shot in very dense fir woods, on the 1st of August, and was a young bird apparently just able to fly.

DENDROICA STRIATA Baird —Black Poll Warbler.

Sylvicola striata, Aud. Birds Amer. ii. 28; pl. 78.

Dendroica striata, Baird, Gen. Rep. 280.

This species I observed in every suitable locality, and was the only warbler I found abundant. It is very numerous in all well wooded situations, and is a most expert fly-catcher. On many occasions I saw it dart into the air in pursuit of flies, mosquitoes, and other insects, and return again to the same twig, in the manner of our common Wood Pewee, *Contopus virens*. This seems to be a more constant habit with this warbler, than with any other of its genus.

PARUS HUDSONICUS Forster.—Hudsonian Titmouse.

Parus Hudsonicus, Aud. Birds Amer. ii. 155; pl. 128. Baird, Gen. Rep. 395.

This species I met with on several occasions, always finding them associating in small restless companies. I experienced great difficulty in procuring specimens, owing to the dense nature of the firs they inhabit; for when in sight, they were always so near, that it was almost impossible to kill them without mutilation. Those procured were all young birds, exhibiting the markings of the adults very indistinctly. They were remarkably tame and familiar, hopping about unconcernedly within a few feet of my head, and hanging from the twigs in every conceivable attitude. I could discover little or no difference in their notes from those of the common Chickadee, *P. atricapillus*, to which they likewise exhibited a great similarity in their general manners, evincing the restlessness and activity so characteristic of the latter bird, and for which the whole family of *Paridae* are so noted.

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EREMOPHILA CORNUTA Boie.—Horned Lark. "Skylark."

Alauda alpestris, Aud. Birds Amer. iii. 44; pl. 151.

Eremophila cornuta, Baird, Gen. Rep. 402.

Very abundant on all the barren moss-covered islands along the coast, and in every suitable situation on the main land. Labrador, indeed, from the fact that it is the most southern region which affords the peculiar open and exposed situations which these birds exclusively frequent, seems to be their special breeding ground. In their voice, flight, and general manners I noticed nothing different from their usual habits, well known during their extensive southern migration, except that they of course do not associate in flocks during the breeding season. To the natives they are known by their usual name of "Sky-larks."

PINICOLA CANADENSIS (Briss.) Cab.—Pine Grosbeak. "Mope," "Redbird."

Corythus enucleator, Aud. Birds Amer. iii. 179; pl. 199.

Pinicola canadensis, Baird, Gen. Rep. 410.

The Pine Grosbeak I ascertained to be not at all rare along the coast of Labrador, where I obtained several specimens; and it is probably still more abundant in the interior. It is confined entirely to the thick woods and patches of scrubby juniper. It is not at all shy, rather evincing a heedlessness of the presence of man, that must arise from the fact that it is so seldom molested; still from the dense nature of the firs it inhabits, it is rather difficult to procure. The female of a pair I obtained sat unconcernedly on a twig only a few paces distant, while I reloaded after shooting her mate; uttering continually a low soft "shep," almost exactly like that of the common Fox Sparrow, *Passerella iliaca*. Another note which I occasionally heard was a prolonged whirring chirrup, uttered in a rather low tone, which appeared to be the usual note of recognition between the male and female. This bird is commonly known to the natives by the singular appellation of "Mope;" the derivation of which word I could not ascertain. It is also sometimes called the "Red-bird;" and it has in addition an Esquimaux name, which, however, I do not venture to attempt.

ÆGIOOTHUS Cabanis.

Syn., *Acanthis*, Bonaparte, Consp. Av. 540. Nec Bechst. 1802; nec Keys. et Blas. 1840.

Ægiothus, Cabanis, Mus. Hein. 1851, 161. Typus *Fring. linaria* L. Baird, Gen. Rep. 1858.

Gen. Ch. Size small. Crown with a crimson patch; the breast and rump tinged with rosy in the male. Bill short, rather slender, conical, and acutely pointed, the lateral outlines concave; culmen, gonys and commissure about straight. Upper mandible with several obsolete ridges parallel with the culmen. Base of upper mandible covered with rigid, appressed, bristly plumuli, concealing the nostrils. Wings very long, reaching beyond the middle of the tail; first, second, and third primaries nearly equal, second usually a little the longest. Feet short, weak; tarsus about equal to middle toe and claw. Inner lateral toe rather longer than the outer; hind toe rather longer than the inner lateral, its claw longer than the digital portion. Tail moderately long, deeply forked; of twelve feathers.

A genus of fringilline birds of the sub-family *Coccothraustinae* Baird, as defined by that author, coming between *Cannabina* Brehm, (Handbuch, 1828, Type *F. cannabina* Linn.), and *Leucosticte*, Swainson, (F. B. A. 1831, iii. 265, Type *Linaria tephrocotis*, Sw.), though its affinities are clearly with the former genus. The general form, in the long wings, moderately long, forked tail, and very short, weak feet, and to some extent the pattern of coloration, in the conspicuous pileum, gular patch, rosy rump, &c., are very similar. But im-
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portant differences are to be found in the slenderer, much more acutely pointed bill, with its decidedly concave lateral outlines, and the different character of the nasal plumuli. The toes are much shorter, the lateral unequal, and the tail feathers broader and more rounded.

Aegiothus of Cabanis (Mus. Hein. 1851, 161,) is based upon the *Fringilla linaria* of Linnæus; and supersedes *Acanthis* of Bonaparte (Consp. Av. 150,) which though used in connection with the present genus, is pre-occupied for another group.

ÆGIOTHUS FUSCESCENS Coues, Nov. sp.—Dusky Red Poll.

A. Aegiotho linario paululum minor, rostro fusco magno, robusto plumulis brevibus sparsisque; superioribus partibus fuscis, vix luteo striatis; alis caudâque vix albido marginatis, lateribus distinctè nec confluentè fusco-striatis. Mas nupt. temp. uropygio rosaceo, pectore carmesino. Long. 5.25 pollices; ala 2.90 poll.

Sp. Ch. Bill large, very stout, the culmen and gonyx slightly convex. Nasal plumuli very short and scant, barely covering the nostrils. Wings very long, pointed; first primary usually longest, second nearly, sometimes quite equal to it, third and fourth successively a little shorter. Tarsus about equal to middle toe and claw. Inner lateral toe but very little longer than the outer; its claw reaching scarcely beyond the basal third of the middle claw. Tail of moderate length, deeply forked. *Male, adult.*—Bill dusky except at base below. Frontlet, space between eye and bill, and gular patch, dull sooty brownish black. Entire upper parts deep dusky or chocolate brown, the edges of the feathers scarcely lighter. Rump whitish, tinged with rosy, thickly streaked with dusky. Wings, wing-coverts, and tail, deep dusky, very narrowly margined and tipped with dull whitish. Throat, breast and sides for some distance bright rosy, or carmine. Sides thickly marked with narrow, sharply defined streaks of chocolate brown. Rest of under parts white. *Female adult.*—Rather smaller than the male; rump but slightly tinged with rosy, and few or no traces of the carmine on the breast, which is dull white streaked with dusky. Other parts as in the male.

Length 5.25 inches, extent 9.00, wing 2.90, tail 2.30. Bill above .35. Tarsus .55; middle toe with claw .55; inner lateral .38.

Habitat.—Northern and Eastern North America. Fort Resolution, (Kennicott.) Labrador, (Coues.)

The essential features in which this species differs from the *A. linaria*, are those given in the diagnosis. The most striking peculiarity of form, as there stated, lies in the bill, which in size and proportions more resembles that of *Leucosticte* than *Aegiothus*. The nasal plumuli are much shorter and more sparse. The other proportions are as in *A. linaria*, but the size is somewhat less. The colors are very different; the upper parts of *A. fuscescens* being so dark and so obsoletely streaked as to seem almost uniform, which appearance is further heightened by the very narrow light edging to the wings and tail, which is reduced to a minimum. The sides are very thickly, but at the same time very distinctly, streaked with narrow sharply defined lines of deep chocolate brown. These streaks in *A. linaria* are less numerous, illy defined and more or less confluent. The carmine on the breast of full plumaged males appears to be deeper than is usual in *A. linaria*, while at the same time the rump is less rosy.

This interesting bird, though by no means so common as the Tit-lark or White-crowned Sparrow, is yet abundant along the coast of Labrador, where apparently it replaces the allied *Chrysomitris tristis*, its southern representative. It is a remarkably unsuspicious and familiar species, showing no signs of fear even when very closely approached. It frequents almost exclusively the scrubby juniper which grows every where in open places, in thick, almost impenetrable patches. I do not think that I ever observed it in more densely

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wooded districts. Its flight is performed in an irregular desultory manner, rising and falling in cycloidal curves, and is seldom protracted to any great distance. While passing over head it utters continually a peculiar rattling chirp impossible to describe, yet once heard never to be mistaken; and while seated on a twig, or engaged in searching for food, it has all the plaintive and varied modulations for which the *Chrysomitris tristis* is so noted, and from which the latter derives its specific name. I never heard any thing that could with any propriety be called a song. The food of this species consists entirely of the seeds of various grasses; and when shot while feeding, it will be found to have the throat crammed with them. In this respect, as well as in voice, flight and general manners, I could not but be struck with the similarity which exists between this bird and the common Goldfinch. Audubon, in his account of the *A. linaria*, is at some pains to refute the opinion that there exists between that bird and the *Chrysomitris*, the great similarity in general habits that has been ascribed to it. Receiving the testimony of that unrivalled student of nature, the close resemblance which I am able to state does exist between the present bird and the Goldfinch, would furnish, if necessary, additional proof of the specific distinction of *A. fuscescens* and *linaria*; since the habits and manners of two birds, however closely allied, will always be found to differ in some particulars.*

PASSERCULUS SAVANNA (Wils.), Bon.—Savannah Sparrow.

Emberiza savanna, Aud. Birds Amer. iii. 68; pl. 160.

Passerculus savanna, Baird, Gen. Rep. 442.

The partiality of this species for low moist meadows and watery savannahs, and the vicinity of the sea-shore, where it frequently associates with the *Ammodromus caudacutus*, is well known as its most characteristic habit. In Labrador, where it is abundant during the summer months, I never noticed it in any other situation. It was frequently to be seen even on the beds of dried "Eel-grass," (*Zostera*,) along the rocky shore, searching for food in company with the Tit-larks, and Bonaparte's Sandpipers, *Actodromas Bonapartei*. It is a shy and timid species, when approached darting at once into the thickest and rankest grass. It is then rather difficult to procure; for it rises only when almost trodden on, flies a few yards in a rapid zigzag manner, and then darting down again, runs rapidly to a considerable distance. It is a very active species, almost continually in motion, running nimbly through the tall grasses like a mouse. I heard no notes except the usual sparrow-like chirp, though in the spring it has considerable vocal powers as I have ascertained on other occasions.† The young differ greatly from the adult, the plumage being every where strongly tinged with ferrugineous, most conspicuous on the wing coverts and tertials; the under parts are thickly streaked with dusky. On the 1st of September, when I left the country, the species was still numerous, apparently as much so as ever.

While off the coast of Nova Scotia, the land appearing as an indistinct line on the horizon, a Savannah Sparrow alighted on the vessel in so exhausted a state, as to suffer itself to be taken in hand. After resting a short time, however, it took flight and disappeared in the direction of the land, which it no doubt reached in safety.

ZONOTRICHIA LEUCOPHRYS (Forst.) Sw.—White-crowned Sparrow. "Chip-bird."

Fringilla leucophrys, Aud. Birds Amer. iii. 157; pl. 192.

Zonotrichia leucophrys, Baird, Gen. Rep. 458.

This large and handsome Finch breeds in great numbers along the entire

* No individuals of *A. linaria* were seen during my stay in Labrador.

† At Washington, D. C., in the month of April.

coast of Labrador. Though I found it plentiful in every locality which I visited, and in all situations, it seems particularly fond of deep thickly wooded and secluded ravines, surrounded by high precipitous cliffs; and when in more open districts confines itself chiefly to the most tangled patches of juniper and scrubby fir. It is a very active and sprightly bird, almost continually in motion; it seldom alights without jerking and flirting the tail, and rapidly uttering its loud chirping. While the female is incubating, the male has a habit of mounting to the top of the cliff or tree nearest his nest, and there repeating his loud, somewhat monotonous, but not unpleasing notes for a half hour at a time. This song is very similar to that of the allied *Z. albicollis*, the common White-throated Sparrow, and consists of two long drawn syllables with a rising intonation, and then three more in a quick hurried manner, with a falling cadence; "pēē, dēē, dē-dē-dē;" the whole a mellow whistle. Should the performer be observed or approached while thus engaged, he instantly becomes silent, and dives hastily into the nearest cover.

The nest of the White-crowned Sparrow is always, I believe, placed on the ground; and, oftener than elsewhere in the midst of the little patches of a low heath that grows abundantly wherever the ground is dry enough. It is composed externally of moss, internally of fine dried grasses, evenly disposed in a circular manner. The eggs are four or five, oftener the former. Nuttall,* when he states that "the eggs, four or five in number, are said to be of a dusky or chocolate color," probably had reference to those of *Anthus ludovicianus*, which are much as he describes them. A nest of the White-crowned Sparrow, which I found on the 23d of July, contained four young, but a few days old. These, however, must have been rather late, as by the 1st of August there were many young birds to be seen. The female, when surprised on the nest, flutters off in silence, retiring but a short distance; but the male, if he be near, instantly flies to the top of the nearest tree or bush, and there vociferates his angry remonstrances, flirting his tail and jerking his body in the most energetic manner. This species, though not so familiar as the Tit-lark, is still frequently seen about the houses; and it is known to the natives simply as the "Sparrow," or oftener as the "Chip-bird."

JUNCO HYEMALIS (L.) Selater.—Snow-Bird.

Niphaea hyemalis, Aud. Birds Amer. iii. 88; pl. 167.

Junco hyemalis, Baird, Gen. Rep. 468.

The Snow-bird, so common and so well known in winter throughout the eastern portions of the United States, is not so abundant as might be expected in Labrador, one of its breeding regions. From the fact that I was not in a suitable locality, I did not observe it until the latter part of July, at which time it was in small companies, the old and young associating together. They kept entirely in the thick woods, and were rather timid. I heard no song, nor indeed any note except the easily recognized chirp peculiar to this species.

Until within a few years the breeding places of the snow-bird were unknown, and its nidification involved in an obscurity remarkable for so common and familiar a bird. But it is now well ascertained to breed in the entire region around Hudson's Bay, and southward in the mountainous regions of New York and Pennsylvania.

SPIZELLA MONTICOLA (Gm.) Baird.—Tree Sparrow.

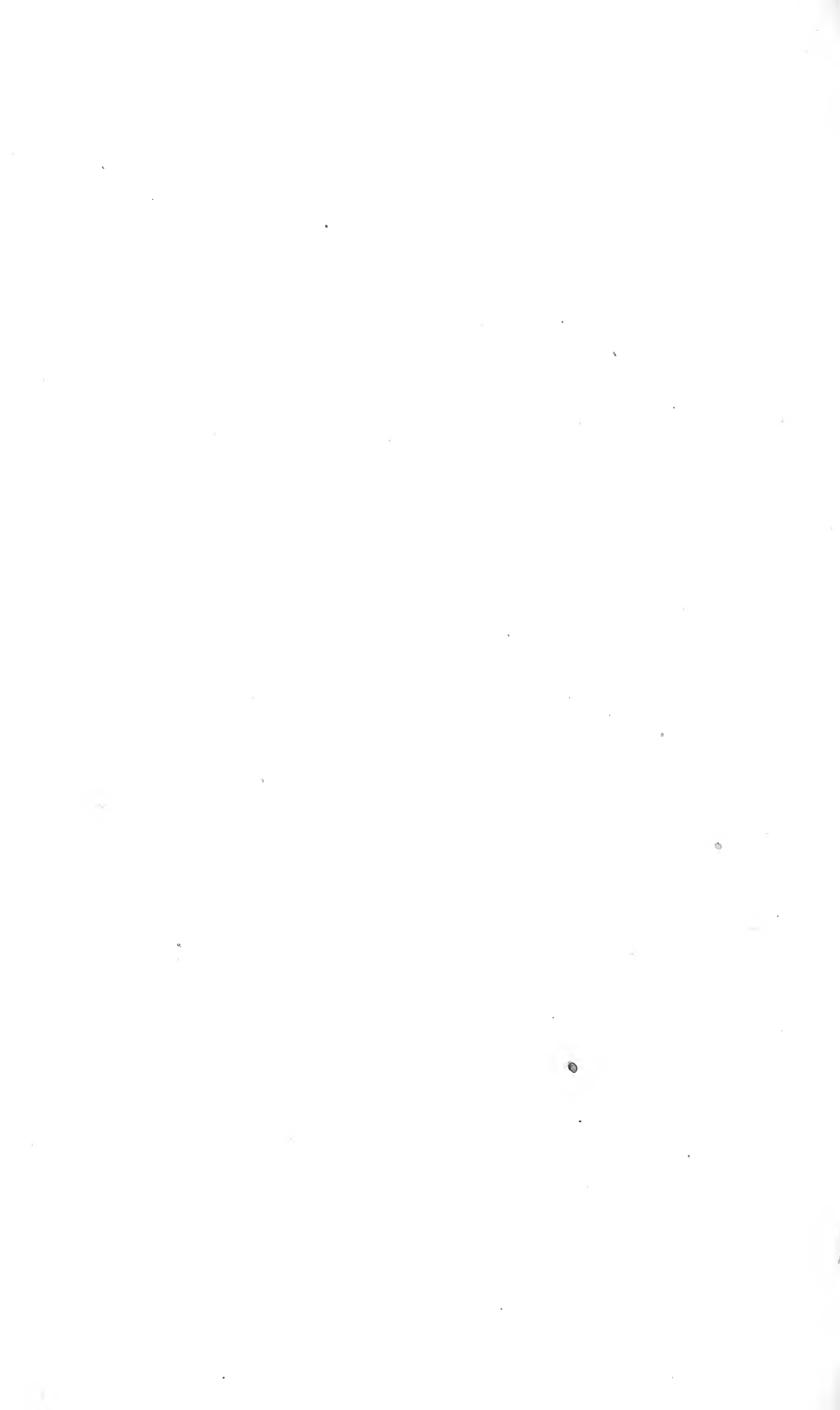
Emberiza canadensis, Aud. Birds Amer. iii. 83; pl. 166.

Spizella monticola, Baird, Gen. Rep. 472.

This little Sparrow is quite common in all wooded districts in Labrador. It is there a very tame and unsuspicious bird, showing no fear even when very

* Manual of Ornithology, 1st ed. i., page . 479





closely approached. I heard no note beyond the usual sparrow-like chirp. It probably leaves the country for the south by the 1st of October, as early in November it is abundant throughout the United States as far south, at least, as Washington, where it may be found in great numbers during the winter months.

SCOLECOPHAGUS FERRUGINEUS (Gm.) Sw.—Rusty Grackle.

Quiscalus ferrugineus, Aud. Birds Amer. iv. 65; pl. 222.

Scolecophagus ferrugineus, Baird, Gen. Rep. 551.

This, the only representative of the *Icteridæ* I observed in Labrador, appears to be rather uncommon. I noticed nothing peculiar in its habits, very probably, however, because my opportunities for observation were so limited. The only note I heard was the rough guttural "*chuck*," common to most of the species of the family. On the 24th of July, I came upon a family of these birds, in a densely wooded marshy spot. The young were at that time just fully fledged, and were fluttering around the vicinity of the nest. The species is confined to heavily wooded districts, showing evident partiality for the low swampy or boggy localities, interspersed with pools, for which some parts of Labrador are so famous.

CORVUS CARNIVORUS Bartram.—Raven.

Corvus corax, Aud. Birds Amer. iv. 78; pl. 224.

Corvus carnivorus, Baird, Gen. Rep. 560.

This celebrated bird does not appear to be rare along the coast of Labrador. The high, precipitous and almost inaccessible cliffs, which, rising abruptly from the sea, give to this rock-bound coast such a barren aspect, afford safe and convenient retreats, where it constructs its nest, and rears its young in perfect safety. It is so excessively watchful and wary a bird, that although we saw them frequently, not a single individual was shot by any of our party. Indeed, I know of no bird more difficult to procure than the Raven; for in addition to its natural sagacity, which surpasses that of almost any bird, the peculiar nature of the rocks it inhabits render the surprising of it almost an impossibility. Its voice is similar to that of the common crow, but far louder and rougher. Ravens are most frequently seen in pairs; and they often descend to the sea shore, to feed on the dead fish, crabs, and other animal substances thrown up by the waves. The eggs, when they can be procured, are eaten by the natives; a species of vandalism well calculated to disturb the equanimity of any ardent collector or naturalist.

At Henley Harbor, an arm of Chateaux Bay, at the northern entrance to the straits of Belle-Isle, there is a remarkable geological formation, known as the "*castle*." This singular *butte* rises abruptly to a height of between 150 and 200 feet above the level of the sea. The sides are either perpendicular or even over-hanging, the strata perfectly vertical, regular and composed of pentagonal prisms, remarkably distinct. The top is perfectly smooth and level, and covered with a rich growth of moss, lichens, and the *Empetrum nigrum*. The ascent can be effected only at one point, where the soft crumbling rock has been worn away by the long continued trickling of water. The whole appears to be in a state of rapid decomposition; large masses of rock lie around the base in confusion, the strata, however, still distinctly visible. The débris thus accumulating at the base has raised a slope to within about fifty feet of the summit. A narrow but very deep channel, cut apparently by the action of the water, separates from it an island on which is another but less extensive formation of the same nature. This "*castle*" was the abode of a pair of Ravens, which, I was told, had resorted there regularly for several years. The nest was placed on a narrow ledge, inaccessible except from above by means of a rope. It was empty at the time I visited the place.

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CORVUS AMERICANUS Aud.—Crow.

Corvus Americanus, Aud. Birds Amer. iv. 87; pl. 225. Baird, Gen. Rep. 566.

On the 14th of July, while under full sail, a crow flew directly past the vessel, near enough for me to identify it without the possibility of mistake. It was the only individual observed during my whole stay in the country.

PERISOREUS CANADENSIS (L.) Bon.—Canada Jay. "Whiskey Jack."

Garrulus brachyrhynchus, Swainson, F. B. A. 1831, ii. 296; pl. 53. juv.

Garrulus Canadensis, Aud. Birds Amer. iv. 121; pl. 234.

Perisoreus Canadensis, Baird, Gen. Rep. 590.

My first acquaintance with this remarkable Jay was on the 1st of August, in a very dense spruce forest. Contrary to my previous impressions regarding the species, on this occasion they were very shy, alighting only on the tops of the tallest trees, and flying off with loud harsh screams on my approach. Subsequently, however, at Rigolet, I found them abundant, and very familiar; one or more were always to be seen hopping unconcernedly in the garden patches around the houses, not in the least incommoded by the presence of man, and showing no signs of fear when very closely approached. The voice of this bird is a loud, harsh, discordant scream, very unlike that of the Blue Jay, *Cyanura cristata*. It possesses all the cunning and thievish propensities for which the whole family of garruline birds are so noted. It is particularly expert in stealing the bait from the fox and marten traps, on which account it is greatly detested by the hunters, who destroy it whenever opportunity occurs. Its most common appellation is simply "*Jay-bird*," though it is also known as the "*Whiskey-Jack*." According to Dr. Suckley, (P. R. R. Rep. xii. pt. ii., p. 216,) who is indebted to Mr. Kennicott for the information, this curious appellation is probably a corruption of the Chippeway name "*Wiss-ka-chon*," changed first into "*Whiskey-John*," and then further twisted to "*Whiskey-Jack*."

The young Canada Jay is wholly of a dull sooty black, with no white whatever about the head. In this state of plumage it has been described and figured by Swainson (F. B. A. 1831, ii. page 296, pl. 55) as a distinct species, under the name of *Garrulus brachyrhynchus*.

TETRAO CANADENSIS Linn.—Canada Grouse. "Spruce Partridge."

Tetrao Canadensis, Aud., Birds Amer. v. 83, pl. 294. Baird, Gen. Rep. 622.

Although the proper abode of the Canada Grouse is the dense and almost impenetrable forests of spruce and fir in the regions around Hudson's Bay, where it is an abundant bird, it is also found as far south as Maine and New York. There, however, it is chiefly confined to the more mountainous regions. In the west it is replaced by the closely allied *T. Franklinii* of Douglas, distinguished by the absence of the rufous band on the tail, and the conspicuously white margins of the tail coverts. The Canada grouse are mostly restricted to thickly wooded regions, where they find an abundance of their favorite food, consisting of seeds and berries of all kinds, and the buds of various shrubs. When skinned they emit a peculiar aromatic odor, arising from the highly flavored nature of their food; their flesh is dark colored and rather bitter. When disturbed they fly but a short distance, soon alighting on the trees, in which position they may be easily approached. The young, which seldom, I believe, number more than five or six, are led about by the parent for some time after they are able to fly. On the 24th of July I surprised several broods, still under the care of the parent. The mother, on discovering me, instantly uttered a "cluck," very similar to that of the common hen, and flew on to the nearest tree, while the young scattered in every direction, and concealed themselves in the thickest brush. A chick which I obtained at that date flew with perfect ease, though it could not have been more than

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two weeks old, and was as yet covered with scarcely anything but down. Its color was a dirty yellow; the few feathers buff, transversely barred with brown; and in size it was about equal to a chicken a week or ten days old.

The species is invariably known as the "Spruce Partridge."

LAGOPUS ALBUS (Gm.) Aud.—Ptarmigan. "Willow Partridge."

Lagopus albus, Aud., Birds Amer. v. 114, pl. 299. Baird, Gen. Rep. 633.

Great confusion prevails among the North American Ptarmigan, both with reference to the number of species to be enumerated, and their relationships to those of Europe. This is occasioned partly by the remote and inaccessible nature of the regions they inhabit, which cause comparatively few specimens to reach the hands of naturalists, and the difficulty of procuring them in summer plumage; since in winter they are almost entirely white, and present few distinctive marks beyond those of size and slight differences of proportions. By the latest authority on the subject, four species are assigned to North America: *L. albus* Aud., (the old *Tetrao albus* of Gmelin,) the largest, entirely white except the tail feathers, and with a very stout bill; *L. rupestris* Leach, which is smaller, with a slenderer bill and a black stripe through the eye; *L. americanus* Aud., a species doubtfully admitted, coming nearest to the *albus*; and *L. leucurus*, a small western species, concerning which there has been no difficulty. Two of these species are found in Labrador: the *L. albus* and *rupestris*, known respectively as the "Willow" and "Rock Partridge." The distinction between them is always recognized; and they are so named from the fact that the former is confined chiefly to thickly wooded districts, while the latter inhabits more open and barren situations.

On the 23d of July I came upon a pair of the larger kind, amid tangled bushes in a low swampy situation. They were very tame and unsuspecting, walking unconcernedly along but a few feet from me, though their being in deep moult, and unable to fly, may have been the cause of this remarkable familiarity. I am credibly informed, however, that at certain seasons, while perched on trees, they can be captured by a noose at the end of a rod or pole. Great numbers of these birds are skinned and stuffed by the natives, while in winter plumage, and sold for about 25 cents apiece. While being skinned, they emit a highly aromatic odor, very similar to that given out by the Spruce Partridge. Their flesh is much used as an article of food.

LAGOPUS RUPESTRIS Leach.—Rock Ptarmigan. "Rock Partridge."

Lagopus rupestris, Aud., Birds Amer. v. 122, pl. 301. Baird, Gen. Rep. 635.

This species also occurs along the coast of Labrador, though, as might be expected from the densely wooded nature of the greater part of the country, much less abundantly than the preceding. I did not meet with it except in the collections of the natives.

BOTAURUS LENTIGINOSUS Steph.—Bittern.

Ardea lentiginosus, Aud., Birds Amer. vi. 94, pl. 365.

Botaurus lentiginosus, Baird, Gen. Rep. 674.

The Bittern is the only species of Heron which ventures so far north as Labrador, with the exception of the *Ardea herodias* and *Nycticorax nycticorax*, which may possibly be found within its limits. The only indications I discovered of the presence of the Bittern was a wing in the possession of a hunter, who, however, did not consider it as a very rare bird.

CHARADRIUS VIRGINICUS Bosc.—Golden Plover.

Charadrius marmoratus, Aud., Birds Amer. v. 203, pl. 316.

Charadrius virginicus, Cassin, Gen. Rep. 690.

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No Golden Plovers were observed until a short time before we left the country; then, about the date of the departure of the Curlews, *Numenius borealis*, they made their appearance in small numbers, in flocks of about a dozen or more. Some of them were in very perfect plumage.

ÆGIALITIS SEMIPALMATUS (Bon.) Cab.—Ring Plover. "Ring-neck."

Charadrius semipalmatus, Aud., Birds Amer. v. 218, pl. 320.

Aegialitis semipalmatus, Cassin, Gen. Rep. 694.

The Ring Plovers are excessively abundant during the summer months along the whole coast of Labrador, which is one of their favorite breeding localities. On the first of September they had not yet left the country, being still as abundant as ever. When not separated into pairs for the purposes of reproduction, they frequent mostly sandy beaches and muddy flats, where they are found in loose straggling companies of from five or six to a dozen or more individuals, associated with the Semipalmated and Bonaparte's Sandpipers. They scatter widely apart while searching for food, running swiftly and gracefully over the sand, with the head lowered. They are at such times usually silent, except when disturbed, when they utter a loud mellow whistle on taking flight. Of all the smaller waders, none, with the exception of Bonaparte's Sandpiper, *Actodromas Bonapartei*, is so gentle and unsuspicious. They never seem to notice an approach of a few yards, and indeed I have sometimes found it difficult to force them to fly. They merely run swiftly a few steps, and then stand perfectly motionless, regarding the intruder in silence. The young run about as soon as hatched, and follow the parent, who leads them in search of food. They are at this time prettily mottled with black, light brownish and white, most of the under parts remaining of the latter color. Birds of the year may at all times be distinguished from the adults by the black of the bands being replaced by dull dirty ash.

No individuals of the *A. melodus* were observed in Labrador, nor did I find any indications of their presence there. From the fact of Audubon's finding them at the Magdalene Islands, it is to be supposed that they breed, sparingly at least, in the country.

STREPSILAS INTERPRES (L.) Ill.—Turnstone. "Chickling."

Strepsilas interpres, Aud., Birds Amer. v. 231, pl. 323. Cassin, Gen. Rep. 701.

The Turnstone I first observed at Henley Harbor, on the 20th of August, when the smaller waders generally had commenced their southern migration. How long they remain in the country I do not know, but on the 1st of September they were apparently as numerous as ever. Though not a very abundant species, I was enabled to procure a sufficient number of specimens, and to observe its curious habits. It afforded me much pleasure to notice with what dexterity they insert the bill beneath small stones and pebbles, and with a quick jerk turning them over, seize upon their prey lurking beneath. Though more shy and wary than the Sandpipers usually are, they did not seem to be as much so as the larger Tatlers. They are known to gunners by the name of "Chicklings."

PHALAROPUS FULICARIUS (L.) Bon.—Red Phalarope. "Bay-bird."

Phalaropus fulicarius, Aud., Birds Amer. v. 291, pl. 339. Cassin, Gen. Rep. 707.

Three specimens of this species were shot at sea, off Belle-Isle, from a flock of six. They were flying in a very compact body, much in the manner of the smaller Sandpipers, for which I at first mistook them. The sailors called them "Bay birds." While at sea we frequently saw this species, or the *P. hyperboreus*, resting gracefully on the water, particularly near masses of floating seaweed. Indeed, the Phalaropes, as a genus, are noted among all the smaller

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waders, both for their beauty and elegance of form, and their grace and activity of movement; whether running swiftly along the sandy shore, or swimming buoyantly on the water, or stepping lightly over the floating leaves of aquatic plants, their motions are equally pleasing. Their lobed feet make them perfectly at home on the water, and they are often seen at a considerable distance from land. The *fulicarius* and *hyperboreus* are both known by the uncouth and inappropriate, though curious name of "*Sea-geese*."

GALLINAGO WILSONI (Temm.) Bon.—Wilson's Snipe.

Scolopax Wilsoni, Aud., Birds Amer. v. 339, pl. 350.

Gallinago Wilsoni, Cassin, Gen. Rep. 710.

From the accounts of the natives, I should judge that the Snipe is abundant in Labrador, as it is in most parts of the United States. I met with but a single individual.

MACRORHAMPHUS GRISEUS (Gm.) Leach.—Red-breasted Snipe.

Scolopax noveboracensis, Aud. Birds Amer. vi. 10, pl. 351.

Macrorhamphus griseus, Cassin, Gen. Rep. 712.

I procured a single individual of this species in immature plumage on the 23d of August, but I learned nothing further respecting it than that it is known by the name of "Brown-back."

TRINGA CANUTUS Linn.—Red-breasted Sandpiper.

Tringa islandica, Aud. Birds Amer. v. 254, pl. 328.

Tringa (Tringa) canutus, Cassin, Gen. Rep. 715.

This large Sandpiper I met with for the first time at Henley Harbor, on the 21st of August, when the *Tringas* and small Waders generally had commenced their southern migration. A few specimens were procured, in immature plumage, showing but slight traces of reddish on the under parts.

ACTODROMAS Kaup.

Actodromas, Kaup., Sk. Ent. Eur. Thierw. 1829. Typus *Tringa minuta* Leisl.

Gen. char. Bill about as long as, or very little longer than, the head, straight, slender, compressed, the tip very slightly expanded. Both mandibles deeply grooved to the expansion of the tip. Wings long; the first and second primaries about equal, the rest rapidly graduated; secondaries short, obliquely incised at the ends; tertials long, slender, flowing. Tail rather long, doubly emarginate, the central feathers projecting. Tibia bare for two-thirds the length of the tarsus. Tarsus about equal to the bill, and equal to the middle toe. Toes entirely free at base, and but very slightly margined. Hind toe very short.

The characters of this genus are well marked and decided, and are very different from those of *Tringa*, with which it is usually associated. In the latter, the bill is very stout, much expanded at tip, and considerably longer than the head or tarsus; the tertials short, thick and comparatively stiff; the tarsus is much longer than the toes, which are very short, stout and widely margined; the tibial feathers reach nearly to the joint, and the tail is nearly even, with the central feathers not projecting. The pattern of coloration is very different. In all these particulars of form and proportion, *Tringa* has very little similarity to *Actodromas*, which is well worthy of full generic rank. As already indicated, the essential characters of the latter lie in the proportions of the bill, tarsus and toe, which are of equal length, and in the doubly emarginate tail. Other features are found in the elongated tertials, long, much exposed tibias, almost entire want of margins of the toes, &c. The known species are very similar in general pattern of coloration, all having the upper parts varied 1861.]

with deep brownish, light ashy and reddish; the breast and jugulum with an ashy or brownish suffusion, the rest of the under parts being white. All, except *A. Bonapartei*, and *A. Cooperi*, have a central blackish field on the rump. The genus comes nearest to *Pelidna* Cuvier, (Regn. Anim. 1817; type *T. cinclus*, L.) which, however, differs in the long decurved bill and some other peculiarities.

ACTODROMAS MACULATA (Vieill.) Cassin.—Pectoral Sandpiper. "Grass-snipe."

Tringa pectoralis, Aud., Birds Amer. v. 259, pl. 329.

Tringa (Actodromas) maculata, Cassin, Gen. Rep. 720.

The "Grass-snipe," as this species is most appropriately called, differs essentially in its habits from any other Sandpiper with which I am acquainted, except the *A. minutilla*. Between these two species, however, there is a striking similarity, both as regards form, color and general habits. I first noticed the Pectoral Sandpiper at Henley Harbor, on the 20th of August, when it had commenced its southern migration. I there found it abundant, and had ample opportunities both of observing its habits and procuring specimens.

This species is seldom or never seen on open sandy beaches, as it prefers at all times the low muddy flats laid bare by the tide, the pools and ditches which intersect them, and the salt marshes by which they are bordered. They are not restricted to the neighborhood of the sea, but frequent low wet meadows and fields at a great distance from any large body of water. There they walk slowly and sedately through the grass in search of food, having little or none of the restless activity which characterizes most Sandpipers. While thus engaged the tail is generally elevated, somewhat on the manner of the *Zenaidura Carolinensis*, if comparison can be made between two birds so dissimilar. This habit of frequenting meadows has gained for them their common appellation of "Grass-snipe." When they rise from the grass to alight again at a short distance, they do so in silence, or with a single "tweet," and fly slowly evenly, and with the wings deeply incurved. When, however, they are frightened, by being repeatedly forced up, or when they are suddenly startled, they spring vigorously, emitting loud rapidly repeated notes, and fly in a quick zigzag manner, like the common snipe. They are then equally difficult to shoot. On several occasions I have noticed a habit which this bird possesses, which I do not recollect of ever having seen stated. When suddenly startled they rise with a loud note, and mounting very high in the air circle over the head of the intruder for several minutes, flying with very great rapidity and in perfect silence. When about to alight, which they often do at the very spot from which they rose, they nearly close the wings, and dart suddenly down in an almost perpendicular direction. This curious habit I have also observed at Portsmouth, N. H., and frequently at Washington, D. C.

This species is found in pairs or singly, and never, I believe, in flocks of any extent. They are very tame and unsuspicious, permitting a near approach without becoming alarmed. In the fall they are excessively fat and delicately flavored, and afford delicious eating. Very little is known of their breeding places, or of their peculiar habits during the season of reproduction.

ACTODROMAS MINUTILLA (Vieill.) Coues.—Least Sandpiper. "Peep."

Tringa minutilla, Vieillot, Nouv. Dict. 1819, xxxiv. 466. Gray, Genera, 1849, iii. 579.

Actodromas minutilla, Coues, Monog. *Tring.* N. A., in Pr. A. N. S. Ph. July, 1861, 191.

Tringa pusilla, Wilson, Am. Orn. 1813, v. 32, pl. xxxvii. fig. 4; id. Brew. Ed. 1840, 347, fig. 161; id. Ord. Ed. 1829, iii. 134; nec Linnæi. Swainson, F. B. A. 1831, ii. 386. Audubon, Orn. Biog. 1834, iv. 180; id. Birds Amer. 1842, v. 280, pl. 337; id. Syn. 1839, 237. Giraud, Birds L. I. 1844, 240. Gray, Genera, 1849, iii. 579.

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Pelidna pusilla, Bonaparte, Comp. List, 1838, 50. Gosse, Birds Jamaica, 1847, 348.

Tringa (Tringa) pusilla, Bonaparte, Comp. Specch. 1827, 62.

Tringa Wilsoni, Nuttall, Manual, 1834, ii. 121. Cooper and Suckley, Nat. Hist. Wash. Terr. 1860, 240. Cassin, Pr. A. N. S. 1860, xiii. 196.

Tringa (Actodromas) Wilsoni, Cassin, Gen. Rep. 1858, 721.

Until very recently, great confusion has prevailed among the smaller Sandpipers; and even now, though the species are pretty well ascertained, the proper name applied to each, and their synonymy, are points which are not yet definitely settled. With regard to no name, however, has there been so much difficulty as to that of *Tringa pusilla* Linn., the proper locating of which has ever been a disputed point. Most authors have referred it to the bird which Wilson, in 1813, (Am. Orn. ut suprâ,) designated by that name, and which was subsequently, in 1834, dedicated to that naturalist by Nuttall, (Man. Orn. ut suprâ.) Audubon, in all his works, Gray, in his genera, and Bonaparte, in his earlier works, adopted the name of *pusilla* for the present bird. As early as 1825, however, Bonaparte was aware that the *T. pusilla* of Linnæus was not the bird that Wilson gave under that name; for, in his observations on Wilson's Nomenclature, pages 88, 89, on the subject of *Tringa semipalmata*, Wils., he says, "Several species have been confounded together under the name of *T. pusilla*; and although the present" (*T. semipalmata*, Wils.) "*is the real species*," &c. In 1858, Cassin (Gen. Rep. page 725) proved pretty conclusively that the *T. pusilla* of Linnæus, based upon the *T. cinclus dominicensis minor* of Brisson, is really the *Ereunetes petrificatus* of Illiger, though he does not change Illiger's specific name. This, however, he has recently done in the Proceedings of the Philadelphia Academy, (xii. 195, 1860,) where he gives the bird as *E. pusillus*.

The name of *pusilla*, then, being exploded for the species now under consideration, the question arises what specific name is to be applied to it. Later authors have mostly taken that of *Wilsoni*, given to the species in 1834, by Nuttall, who describes its habits so accurately that there can be no doubt as to what bird he has reference. But the claims of "Le tringa maringouin," *Tringa minutilla* of Vieillot (Nouv. Dict. ut suprâ) to be the present species, appear to have been overlooked, or at least not generally conceded. Brewer, indeed, in his edition of Wilson, in 1840, quotes it, and Cassin, in the General Report in 1858, gives it as a synonym, but both with a query. But that *Tringa minutilla* really refers to the present species, there can be, I think, no reasonable doubt. Vieillot, page 466 of the Nouv. Dict., says of it, "Le nom que j'ai conservé à cet oiseau est celui sous lequel il est connu dans nos colonies de l'Amerique, et qui lui a été imposé d'après sa petite taille;" and after a description which applies well, he continues—"Il a des rapports avec le tringa minuta de Leisler," and adds, speaking of its habits, "Comme les tringas becos se comportent de même, il est résulté qu'on les a confondus ensemble." The description, especially with reference to size ("quatre pouces dix lignes") and to the length and proportions of the bill, ("noir, très grêle, et long de neuf lignes; les tarses de la même longueur,") will apply to no other species. Another evidence that this description has reference to the *Actodromas Wilsoni*, is the fact that the author recognizes *Tringa semipalmata*, Wils. "Le tringa demipalmé" as a totally distinct species. What the "tringa beco, *Tringa pusilla*, Lath.," of page 452 of the same work, refers to, is rather difficult to determine. Vieillot refers to the Am. Orn. plate 37, fig 4, which is *Tringa pusilla* of Wilson; but also quotes Brisson's "petite Alouette-de-mer de Saint-Dominique" which is *Ereunetes petrificatus* of the General Report. The description, however, applies best to the latter, which it may be well to consider it.

From the foregoing considerations, therefore, I cannot but adopt the specific name of *minutilla*, which has priority over *Wilsoni*, at least until weightier 1861.]

reasons are adduced on the opposite side of the question. With regard to the generic characters there is not the slightest difficulty. The bird presents the closest affinity to the type of the genus *Actodromas*, (*T. minuta* Leisl.), and is very different from either *Tringa* or *Pelidna*, in both of which it has been placed.

This diminutive species, in form, color and general habits, is very closely allied to the preceding, of which it is in fact a perfect miniature. As far as my own observation extends, the same remarks with regard to the manners, voice, flight, &c., apply equally well to this species. It even possesses the curious habit mentioned under the preceding bird. Though so much smaller, its note is fully as loud and piercing. The chief difference is, that in the fall the Least Sandpipers collect in flocks of considerable extent, and that they are found on sandy beaches oftener than are the Pectoral Sandpipers. Nevertheless, its favorite situations are low muddy flats, and the ditches that intersect marshy and sedgy fields, where it finds an abundance of its favorite food. In Labrador I think I never observed them in any other situations. They search for food with remarkable industry and perseverance, carefully examining with their delicate bills every inch of ground they pass over; while thus engaged they may be approached within a few feet without showing any signs of fear. Together with the *A. Bonapartei* and the *Ereunetes pusillus*, they are known by the common name of "Peeps." On the first of September they had not left the country, being still abundant.

ACTODROMAS (HETEROPYGIA) BONAPARTEI (Schl.) Cassin.—Bonaparte's Sandpiper. "Peep."

Pelidna cinclus, var. Say, Long's Exped. 1823, i. 172.

Tringa Schinzii, "Brehm." Bon. Syn. 1828. [Nec Brehm.] fide Gen. Rep.

Aud. Birds Amer. 1842, v. 275, pl. 335, et al. Auct. Amer.

Tringa Bonapartei, Schlegel, Rev. Crit. Eur. Ois. Eur. 1844, 89.

Tringa (Actodromas) Bonapartei, Cassin, Gen. Rep. 722.

Actodromas (Heteropygia) Bonapartei, Coues, Monogr. Tring. N. A., in Pr. A. N. S. Ph. July, 1861, 199.

Audubon, in his account of this species, remarks: "Those procured in Labrador were shot in the beginning of August, and were all young birds, apparently about to take their departure." I met it for the first time on the 30th of July; but on the first of September, when I left the country, they were still as numerous as ever. They are found in great abundance on the rocky shores of Labrador, where covered with sea-weed and interspersed with muddy flats and shallow pools, in which last the birds wade quite up to the breast. I have also frequently seen them in a situation where I never found any other Sandpiper—on the large masses of rock sloping down abruptly to the water, green and slippery from the continued falling of the spray. They seem to be very fond of these locations, and I seldom passed one without seeing several of these "peeps" running nimbly about; and I have actually approached within three or four feet of them, as they stood motionless regarding me with curious eye. Of all the Sandpipers this is the most gentle and unsuspecting; they seem utterly regardless of the presence of man, and do not intermit their occupation of searching for food, though the observer may be standing within a few feet of them. When startled they emit a low soft "weet" very different from that of any other Sandpiper, and fly off in a very compact flock. If a part of them be killed, the gunner may commit equal havoc with his second barrel, as after a few circlings they fly past, or alight again on the same spot. They fly rapidly, in a rather unsteady manner, alternately showing the under and upper parts; and they may always be recognized in flight by the conspicuously white upper tail coverts. They usually associate with the

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Semipalmated Sandpipers and the Ring Plovers, and in common with other small species are known by the general name of "Peeps." Those that I shot were not so excessively fat as the *A. maculata* and *Ereunetes pusillus* commonly are at the same season.

EREUNETES PUSILLUS (Briss.) Cassin.—Semipalmated Sandpiper. "Peep."

Tringa cinclus dominicensis minor, Brisson, Ornith. 1760, v. 222, pl. xxv. fig. 2, [haud dubiè.]

Tringa pusilla, Linnæus, Syst. Nat. 1766, i. 252, fide Gen. Rep.

? *Tringa pusilla*, Vieillot, Nouv. Dict. 1819, xxxiv. 452, [ad *T. cincl. dom. min.* Briss. refert.]

Ereunetes petrificatus, Illiger, Prod. 1811, 262. Cassin, Gen. Rep. 1858, 724.

Tringa semipalmata, Wilson, Am. Orn. 1813, vii. 131, pl. lxiii. fig. 4; id. Ord. Ed. 1829, iii. 132, pl. lxiii. fig. 4; id. Brewer, Ed. 1840, 542, fig. 225; ibid. Syn. 725. Vieillot, Nouv. Dict. 1819, xxxiv. 462; Dict. Class d'Hist. Nat. 1822, ii. 251. Swainson, F. B. A. 1831, ii. 381. Audubon, Orn. Biog. 1839, v. p. 110, pl. 408; id. Syn. 1839, 236; id. Birds Amer. 1842, v. 277, pl. 336. Giraud, Birds L. I. 1844, 239. Newberry, P. R. R. Surv. 1857, vi. 100.

Ereunetes semipalmatas, Cabanis, Schomburgk's Reise, iii. 758, fide Gen. Rep. Bonaparte, Compt. Rend. 1856, fide Gen. Rep. Cabanis, Journ. 1856, 419, fide Gen. Rep.

Tringa (Hemipalama) semipalmata, Bonaparte, Obs. Wils. 1825, num. 212; i. l. Specch. Comp. 1827, 62.

Tringa (Heteropoda) semipalmata, Nuttall, Man. Orn. 1834, ii. 136.

Hemipalama semipalmata, Lambeye, Av. Cubae, 1850, 96.

Hemipalama minor, Lambeye, Av. Cubae, 1850, 97.

Heteropoda semipalmata, Bonaparte, Comp. List, 1838, 49. Dekay, N. Y. Fauna, 1844, 236, pl. 86, fig. 195. Gray, Genera, 1849, iii. 580.

? *Heteropoda mauri*, Bonaparte, Comp. List, 1838, 49.

Ereunetes mauri, Cabanis, Journ. 1856, 419, fide Gen. Rep.

Tringa brevirostris, Spix, Aves Bras. 1825, ii. 76, fide Gen. Rep.

? *Pelidna Brissoni*, Lesson, Man. d'Ornith. 1828, ii. 277, [T. pusillum, Linn. citat.]

Ereunetes pusillus, Cassin, Proc. Acad. Nat. Sc. 1860, xiii. 195. Coues, Monog. Tring. N. A., in Pr. A. N. S. Ph. July, 1861, 177.

The statements made under the head of *Actodromas minutilla*, tending to demonstrate that *Tringa pusilla* of Linnæus is not the bird given under that name by Wilson, also prove that the name really belongs to the species now under consideration. As there stated, *pusilla* was applied by Linnæus in 1766 to the bird figured and described by Brisson, (Ornith. 1760, v. p. 222, pl. xxv. fig. 2,) under the appellation of "La petite Alouette-de-mer de S. Dominique," *Tringa cinclus Dominicensis minor*. The description applies well, and the figure plainly shows the webbing of the toes, a feature which exclusively characterizes this species among the smaller Sandpipers. There being no reasonable doubt, therefore, of what *pusilla* really refers to, it must, according to the laws of nomenclature, take precedence over both *petrificatus* of Illiger, and *semipalmatus* of Wilson. Cassin restores the name in the Proceedings of the Academy of Natural Sciences, above cited, there calling the bird *Ereunetes pusillus*, though in the General Report he retains the specific name of *petrificatus* bestowed by Illiger in 1811.

The webbed feet of this bird were very early made the grounds for generic distinction from *Tringa*, to which they would fully entitle it, even were no other characters involved. But though several genera have been proposed for it, fortunately there is not the slightest difficulty as to the proper one to be employed. *Heteropoda* of Nuttall, (1834,) and *Hemipalama* of Bonaparte, (1825,) must both yield to *Ereunetes petrificatus*, which, according to the Gene-1861.]

ral Report, has been proved to be the *T. semipalmata* of Wilson, by actual examination of the type specimen. This being the case, *Ereunetes* must be used in the present connection, though for the reasons given above, *petrificatus* cannot be retained. The cause of Nuttall's proposing for the bird a new genus was probably the fact that Bonaparte in 1828 employed his *Hemipalama* in connection with a very different bird—the *Micropalama himantopus* of Baird—with which it has scarcely a generic character in common except the webbed toes. As a reference to the article will show, the name was proposed for, and first used in connection with, the *T. semipalmata* Wils.

I have thought it well to present the synonymy of this species, since, as will be seen, it has received a great variety of names. According to the General Report, the *Heteropoda Mauri* of Bonaparte, or the *Ereunetes Mauri* of Cabanis, is merely a large race of the present bird; while the remarkable variations in the length of the bill, to which the species is subject, have given rise to the *Hemipalama minor* of Gundlach, and the *Tringa brevirostris* of Spix. *Pelidna Brissoni* of Lesson is probably this species, since he refers to *Tringa pusilla* of Linnæus.

No individuals of this species were observed until the latter part of July, but soon after that date they became excessively abundant, and continued so during the month of August. When on muddy flats I generally found them associated with the Ring Plovers and Bonaparte's Sandpipers; but when on open sandy beaches they keep mostly to themselves, sometimes in flocks of great extent, the other species with which they principally mix not generally frequenting such situations. When in large flocks dozens may be killed at a shot; and as, after many wheelings, they often alight again on the same spot, they afford a second opportunity to the gunner. When wounded, they swim with considerable ease, aided by their semipalmated feet; but they are not capable of diving to any extent. These birds, possessing very few distinctive traits of habit among the smaller Sandpipers, are yet remarkable in one particular—the great facility with which they may be decoyed by imitating their call—a low mellow whistle. When skilfully executed, I have seen them approach within a few feet of the person seated on a rock in full view, though a moment after, on discovering their mistake, they would immediately take flight. They are also noted for the excessively fat condition in which they are always found in the fall, exceeding that of almost any other bird of their family. In this state they are delicious eating, being tender, juicy and delicately flavored, but on account of their diminutive size they are not much sought after. This species is the "Peep" *par excellence*, though the *Actodromas Bonapartei* and *minutilla* are also known by the same name.

GAMBETTA MELANOLEUCA (Gm.) Bon.—Tell-tale. "Yellow-legs."

Totanus vociferus, Aud., Birds Amer. v. 316, pl. 345.

Gambetta melanoleuca, Cassin, Gen. Rep. 731.

This large tattler, so well known and so universally disliked by all gunners on account of its watchful and noisy nature, is a very common bird along the coast of Labrador during the summer and early fall. During the fore part of the summer I found them very wary and difficult of approach. They would stand motionless and in silence, regarding me with watchful attention until I was nearly within shooting distance, when, at a single note from one of the flock, all would instantly take flight, emitting their loud and clear whistling, as if rejoicing at my discomfiture. By the middle of August, however, they seemed to have laid aside their watchfulness, and numbers were procured without difficulty. Though found in all situations near the water, their favorite localities seemed to be the muddy flats laid bare by the tide, the salt marshes adjoining them, and the pools which dot these marshes. They are seldom found in good condition for the table, being generally very lean. They are known altogether as "Yellow-legs."

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TRINGOIDES MACULARIUS (L.) Gray.—Spotted Sandpiper. "Teeter-tail."

Totanus macularius, Aud., Birds Amer. v. 303, pl. 342.

Tringoides macularius, Cassin, Gen. Rep. 735.

The Spotted Sandpiper forms almost the only exception to the general rules, that the species of this family retire to very high latitudes to rear their young, and on their return south in the fall associate in flocks of greater or less extent. It has a breeding range almost unparalleled among the Sandpipers, rearing its young from as far south, at least, as Washington, D. C., to the confines of the Arctic circle. Nor is it confined to the immediate vicinity of the sea; it abounds along the rivers and creeks of the interior, and shows a marked predilection for the vicinity of man's abode. The nest is usually placed in an orchard or meadow, often in a ploughed field, and is a mere depression in the ground, lined with a few dried grasses, or a little eel-grass, (*Zostera*.) The eggs, as usual in this family, are four in number, large for the size of the bird, pointed, and of a light cream color, every where blotched and spotted with dark brown and black. A nest found on the 4th of July, on one of the barren islands off the coast of Labrador, contained eggs in which the embryos had scarcely begun to be developed, while on the 17th of June, eggs found at Portsmouth, N. H., were on the point of hatching.

The Spotted Sandpiper is at all times a solitary species; it is rare to see more than two or three together. Its note is a low mellow "weet," often repeated. When wounded, even if very severely, it dives with great facility and quickness, and sometimes swims a considerable distance under water. Its most peculiar trait, however, is the habit it possesses of always, on alighting, and frequently at other times, balancing its tail in a remarkable manner, just as the Solitary Sandpiper, *Rhyacophilus solitarius*, does its head. This peculiarity has gained for it the common appellation of "Teeter-tail."

TRYNGITES RUFESCENS (Vieill.) Cab.—Buff-breasted Sandpiper.

Tringa rufescens, Aud., Birds Amer. v. 264, pl. 331.

Tryngites rufescens, Cassin, Gen. Rep. 739.

A single specimen of this rather uncommon Sandpiper was shot on the 20th of August by one of the sailors, but was unfortunately too much mutilated to be preserved. I learned nothing of its habits; it is probably a rare bird in Labrador.

NUMENIUS (NUMENIUS) LONGIROSTRIS Wils.—Long-billed Curlew. "Sickle-bill."

Numenius longirostris, Aud., Birds Amer. vi. 35, pl. 355. Cassin, Gen. Rep. 743.

Although I did not meet with this species myself, I was assured by all the hunters that it is occasionally seen among the vast flocks of the *N. borealis* that appear in the autumn. It is, however, rare in Labrador. It is known by the very suggestive name of "Sickle-bill."

NUMENIUS (PHAEOPUS) HUDSONICUS Lath.—Hudsonian Curlew. "Jack Curlew."

Numenius Hudsonicus, Aud., Birds Amer., v. 42, pl. 356. Cassin, Gen. Rep. 744.

Of the Hudsonian Curlew I saw but few individuals, and these were so shy that it was with difficulty that they were procured. They were most numerous at the time that the *N. borealis* were about taking their departure; and in their general manners, food, &c., appeared to be very similar to the latter. Their voice, however, is much louder and rougher. They are known to the natives as "Jack Curlews."

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NUMENIUS (PHAEOPUS) BOREALIS (Forst.) Lath.—Esquimaux Curlew. "The C'lew."

Numenius borealis, Aud. Birds Amer., vi. 45, pl. 357. Cassin, Gen. Rep. 744.

From the time of my first arrival in the country until the second week in August, the stereotyped reply of the inhabitants to my inquiries concerning game was, "There is nothing to shoot yet, sir; the C'lews have not yet arrived; but when they come you will have fine sport." All were agreed as to the abundance of the birds, the facility with which they could be obtained, the sport of killing them, and their delicacy on the table. Naturally enough, when disappointed in procuring other birds, our thoughts turned to the Curlews, and we endeavored to console ourselves by shooting them in anticipation. It was not, however, until the 16th of August, when in the romantic harbor of "Indian Tickle," that we obtained the first glimpse of the Curlews. Five days later, at Henley Harbor, our sport commenced; the Curlews were there in immense numbers, and for nearly two weeks we all enjoyed such sport as almost made us forget our disappointments and hardships on the dreary Labrador coast. The Curlews then disappeared as suddenly as they had arrived; not, however, until I had had ample opportunities of studying their habits, and had procured a sufficient number of specimens.

The Esquimaux Curlew arrived on the Labrador coast from its more northern breeding grounds in immense numbers, flying very swiftly in flocks of great extent. These immediately broke up into smaller companies, and proceeded at once in search of food. They remained but a very short time. As Audubon most correctly says, "I was not long in discovering that their stay on this coast was occasioned solely by the density of the mists, and the heavy gales that already gave intimation of the approaching close of the summer; for whenever the weather cleared up a little, thousands of them set off and steered in a straight course across the broad Gulf of St. Lawrence. On the contrary, when the wind was high and the fogs thick, they flew swiftly and low over the rocky surface of the country, as if bewildered. Wherever there was a spot that seemed likely to afford a supply of food, there the Curlews abounded and were easily approached." His observations, however, differ much from mine, in reference to the time of the arrival and departure of the birds. He states that they made their first appearance on the 29th of July, and had all left by the 12th of August; whereas, I saw none until about that latter date, and none were to be seen on the first of September. For two or three days before their final departure, we had noticed them all moving directly southward, flying very high in the air in loose straggling flocks, with a broad extended front.

The Curlews associate in flocks of every size, from three to as many thousands, but they generally fly in so loose and straggling a manner, that it is rare to kill more than half a dozen at a shot. When they wheel, however, in any of their many beautiful evolutions, they close together in a more compact body, and offer a more favorable opportunity for the gunner. Their flight is firm, direct, very swift, when necessary much protracted, and is performed with rapid regular beats. They never sail except when about to alight; then the wings are much incurved downwards, in the manner of most Waders. As their feet touch the ground their long, pointed wings are raised over the back until the tips almost touch, and then deliberately folded, much in the manner of the Solitary Sandpiper, *Rhyacophilus solitarius*. Their note is an oft-repeated, soft, mellow, though clear whistle, which may be easily imitated. By this means they can readily be decoyed within shot, if the imitation is good and the gunner is careful to keep concealed. The smaller the flock, the more easily are they allured, and a single individual rarely fails to turn his course toward the spot from whence the sound proceeds. When in very extensive flocks they have a note which, when uttered by the whole number, I can compare to nothing but the chattering of a flock of blackbirds. When wounded and taken in hand, they emit a very loud harsh scream, like that

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of a common hen under similar circumstances, which cry they also utter when pursued.

Their food consists almost entirely of the Crow-berry, *Empetrum nigrum*,* which grows on all the hill-sides in astonishing profusion. It is also called the "Bear-berry" and "Curlew-berry." It is a small berry, of a deep purple color, almost black, growing upon a procumbent, running kind of heath, the foliage of which has a peculiar moss-like appearance. This is their principal and favorite food; and the whole intestine, the vent, legs, bill, throat, and even the plumage are more or less stained with the deep purple juice. They are also very fond of a species of small snail, that adheres to the rocks in immense quantities, to procure which they frequent the land-washes at low tide. Food being so abundant, and so easily obtained, they become excessively fat. In this condition they are most delicious eating, being tender, juicy, and finely flavored; but as might be expected, they prove a very difficult job for the taxidermist.

Although the Curlews were in such vast numbers, I did not find them so tame as might be expected, and as I had been led to suppose by previous representations. I was never able to walk openly within shooting distance of a flock, though I was told it was often done. The most successful method of obtaining them is to take such a position as they will probably fly over in passing from one feeding ground to another; they may then be shot with ease, as they rarely fly high at such times. The pertinacity with which they cling to certain feeding grounds, even when much molested, I saw strikingly illustrated on one occasion. The tide was rising and about to flood a muddy flat of perhaps an acre in extent, where their favorite snails were in great quantities. Although six or eight gunners were stationed on the spot, and kept up a continual round of firing upon the poor birds, they continued to fly distractedly about over our heads, notwithstanding the numbers that every moment fell. They seemed in terror lest they should lose their accustomed fare of snails that day. On another occasion, when the birds had been so harassed for several hours as to deprive them of all opportunity of feeding, great numbers of them retired to a very small island, or rather a large pile of rocks, a few hundred yards from the shore, covered with sea weed, and, of course, with snails. Flock after flock alighted on it, till it was completely covered with the birds, which there, in perfect safety, obtained their morning meal.

I was told that the Curlews were never seen in Labrador, except for the short period in the autumn. Such, however, I do not think to be the case, particularly as Audubon, upon good authority, asserts to the contrary. It is probable that the celerity and silence with which it passes northward during the spring migration, causes it to be partially overlooked. Its migrations are very extensive, but performed so quickly and silently that it is rarely seen south of the New-England States. It is found in Texas; though as far as my knowledge extends, it does not breed much south of Hudson's Bay. In Labrador it is known by its proper name, which, however, is invariably shortened into "C'lew." Further south it is called the "Dough-bird;" but this name is also applied to other birds. In a great number of specimens I found considerable differences in size, in the color of the under parts, which varies from creamy white to deep buff, and in the purity and extent of the white patch on the throat. These differences, however, were not indicative of sex, nor even of age, so far as I could ascertain.

* "EMPETRUM, Tourn. Flowers polygamous, scattered and solitary in the axils of the leaves, (inconspicuous) scaly-bracted. Calyx of 3 spreading and somewhat petal-like sepals. Stamens, 8. Style very short; stigma 6-9 rayed. Fruit, a berry-like drupe, with 6-9 seed-like nutlets, each containing an erect anatropous seed. *E. nigrum*, L. Procumbent and trailing; leaves linear oblong, scattered; fruit black."—(Gray's Manual of Botany, College Ed. p. 393.)

BERNICLA CANADENSIS (L.) Boie.—Canada Goose.

Anser Canadensis, Aud., Birds Amer. vi. 178, pl. 376.

Bernicla Canadensis, Baird, Gen. Rep. 764.

No Wild Geese were observed until the second week in August, when for several days we saw them fly southward in small flocks, keeping at a great height in the air, and always preserving a wedge-shape form. No specimens were procured.

ANAS BOSCHAS Linn.—Mallard.

Anas Boschas, Aud., Birds Amer. vi. 236, pl. 385.

Baird, Gen. Rep. 774.

Audubon, in his account of this Duck, says "On the western coast of Labrador, none of the inhabitants we conversed with had ever seen the Mallard, and in Newfoundland the people were equally unacquainted with it, the species being in those countries replaced by the Black Duck, *Anas fusca*." Although it is a rare species in Labrador, I ascertained its existence there from a very fine pair offered for sale by one of the natives. In the interior of the continent it goes as far north at least as Great Slave Lake, where it breeds in considerable numbers.

ANAS OBSCURA Gm.—Dusky Duck. "Black Duck."

Anas obscura, Aud., Birds Amer. vi. 244, pl. 386.

Baird, Gen. Rep. 775.

The Dusky Duck is by far the most abundant of the *Anatinæ* along the coast of Labrador, where it breeds very plentifully. Though some times seen along the rocky and barren islands that skirt the coast, it at all times shows a decided preference for the ponds and streams of the interior. When the females are incubating, and engaged in rearing their young, the males desert them, and retire to secluded situations to renew their feathers. Some which I shot on the 23d of July were at that time in deep moult, and entirely unable to fly, though they made their way over the water with astonishing celerity. I saw young nearly half grown on the 1st of August; they were at that time still led about by the parent, and were unable to fly. It is a remarkably shy and watchful bird, so much so that it is only with great difficulty it can be procured. It is much esteemed as an article of food, and is known to the inhabitants as the "Black Duck."

NETTION CAROLINENSIS (Gm.) Baird.—Green-winged Teal.

Anas Carolinensis, Aud., Birds Amer. vi. 281, pl. 392.

Nettion Carolinensis, Baird, Gen. Rep. 777.

Though the Green-winged Teal is a rare bird along the coast of Labrador, yet Audubon is incorrect in saying that it is never found there. A specimen which I saw in a collection of birds at Rigolet, proves its existence in that country. It is abundant in the interior, breeding in the region around Great Slave Lake.

NETTION CRECCA (L.) Kaup.—English Teal.

Nettion crecca, Baird, Gen. Rep. 778.

I was so fortunate as to procure a well characterized specimen of this Teal, which, though a common bird in Europe, is only known in North America as a rare straggler from that country. It is closely allied to the Green-winged Teal, but is nevertheless perfectly distinct, the differences being readily appreciable even without comparison. These consist in the entire absence of the white crescent before the wing; the more conspicuously colored elongated scapulars, which are deep black and pure creamy white; and the remarkable distinctness of the white lines on the head. I learned nothing of its habits.

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CAMPTOLÆMUS LABRADORIUS (Gm.) Gray.—Labrador Duck. "Fool-bird."

Fuligula Labradora, Aud., Birds Amer. vi. 329, pl. 400.

Camptolæmus Labradorius, Baird, Gen. Rep. 803.

I did not succeed in procuring or even meeting with this rare and very remarkable Duck. I was informed that, though it was very rarely seen in the summer, it is not an uncommon bird in Labrador during the fall; it is known by the peculiar appellation of "Fool-bird," a name given on account of its remarkably unsuspecting nature, which renders it easy to approach. The name, however, can scarcely be a general one. Further than this I learned nothing respecting it.

PELIONETTA PERSPICILLATA (L.) Kaup.—Surf Duck. "Bottle-nosed Coot."

Fuligula perspicillata, Aud., Birds Amer. vi. 337, pl. 402.

Pelionetta perspicillata, Baird, Gen. Rep. 806.

The Surf Duck is an abundant bird along the coast of Labrador, where a good many breed, though perhaps a greater number go still further north. They are seen in flocks of considerable extent, especially during the renewal of their feathers, at which time they collect in great numbers along the shores of the bays and inlets. On the 3d of August, while sailing up Esquimaux Bay, the shore for nearly a mile was lined with these Ducks, and the succeeding species. They were all in deep moult, and most of them unable to fly, and yet were so wary and vigilant, that few were obtained, for they dived at the flash of the gun with such celerity as to escape the shot. They are tough birds, and remarkably tenacious of life, and require a heavy charge to kill them. Those procured were excessively fat, but their flesh was rank and oily. They are known as "Bottle-nosed Coots," a name given in allusion to the very peculiar shape and color of the bill.

MELANETTA VELVETINA Baird.—Velvet Duck. "White-winged Coot;" "Brass-winged Diver."

Fuligula fusca, Aud., Birds Amer. vi. 332, pl. 401.

Melanetta velvetina, Baird, Gen. Rep. 805.

This species is nearly if not quite as abundant as the preceding, with which it is often found associating. It appears to possess much the same habits. It is a very shy and vigilant species, and possesses powers of diving surpassed by few birds. It is known by the names of the "White-winged Coot" and "Brass-winged Diver," the former being the most usual appellation.

Though I did not meet with the American Scoter, *Oidemia Americana*, I was assured that it breeds in the neighborhood of Esquimaux Bay. It is known as the "Black Coot" and "Butter-billed Coot." The three species of *Oidemiæ* are all called "Coots;" a nomenclature that puzzled me not a little, until I ascertained to what birds the names referred.

SOMATERIA MOLLISSIMA (Linn.) Leach.—Eider Duck. "Sea-duck."

Fuligula mollissima, Aud., Birds Amer. vi. 349, pl. 405.

Somateria mollissima, Baird, Gen. Rep. 809.

The Eider Duck, so widely and justly celebrated for the valuable down which it furnishes in such quantity as to make it a profitable article of commerce, is the most abundant Duck throughout the extent of Labrador, which is with it a favorite breeding place. For although many breed in very high latitudes on both sides of the Atlantic, yet Labrador, from the peculiar nature of its coast, seems a country specially adapted to its wants. It also finds there a safer place of retreat while engaged in the duties of incubation, since, at least as far as I can ascertain, its down is not so regularly sought for as it is in some other countries. Wherever found at all it is an abundant species; but on the American coast it is seldom or never seen south of Long Island or the New Jersey Capes.

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The Eiders choose for their breeding places the low, rocky, barren islands that stud the Labrador coast, generally giving the preference to those which are more or less covered with grass and low scrubby juniper. The nests are always placed on the ground; often a tuft of grass is selected, or the nest is hidden beneath the spreading boughs of juniper. The grassy crevices between flat strata, and the soft beds of moss at the foot of over-shadowing rocks are also favorite situations. The nest is of rather bulky construction, formed of moss, lichens, and dried grasses and seaweed, loosely matted together, and the whole fabric sunk as deeply as possible into the ground. The down is seldom, I think, added until the full complement of eggs is made up. These rarely exceed five or six in number, and occasionally are but four. They vary much in size and shape, and also considerably in color. They average about three inches in length by two in breadth, and the shape varies from an almost perfect ellipse to a regular ovoid or ovate. The ground color is a dull olive green, frequently with a bluish, and sometimes with a creamy tinge; and is often discolored with darker patches, like stains. The shell is smooth and polished. The eggs are excellent eating, as I know to my cost; for having on one occasion collected a large basketful, all those that were fresh and could be neatly blown, were appropriated by the sailors during a temporary absence.

While the female is incubating she permits a very near approach before she forsakes her nest; it is not uncommon to walk up to within a few feet of the sitting bird; she then flaps off in a hurried frightened manner, but always in silence, and makes directly for the nearest water. If a gun be fired on a small island, where many birds are sitting, all immediately leave their nests and collect in a body at some distance on the water. There they wash and plume themselves until the intruder withdraws, when they soon resume their duties.

There seems to be considerable difference in the time of laying the eggs. On the 4th of July, when I made most of my observations on these birds, I found nests in which the full complement had not yet been laid; eggs with chicks in all stages of development; and broods of young were seen, led about on the water by the parent. As soon as the ducklings are hatched, they are led directly to the water, where they swim with perfect ease and dive with facility. The mother keeps them close about her, anxiously watching for every appearance of danger that might befall them, and ready at any moment to give battle to any hungry gull that might attack them. Under these circumstances only did we ever succeed in openly rowing within shot of an Eider, when anxiety for the safety of her brood made her forget her own danger. On such occasions, the mother, keeping them close together, would urge them forward until the danger became too imminent, when at a single note, the young would scatter and dive with astonishing celerity, and the mother dive or fly off as necessity required. The ducklings at this time are covered with long hair-like down, very fine, of a dusky brown above and light silvery grey below.

As soon as the females begin to deposit their eggs, they are deserted by the males, and from this time the whole care of incubation and rearing the young devolves upon the former. The males, at this season, assemble in large flocks, and retire to the outer and most secluded islands during the time of the renewal of their feathers. They are excessively shy and difficult to approach. The females, even those which are sterile, never, I believe, associate with the males, but keep in flocks by themselves.

There is a great difference in the colors of the plumage of the females at different ages, varying from very light ochreous to a uniform dark chestnut brown, much as represented in Audubon's plate. They are universally known as "Sea-ducks," the males being always distinguished as "Sea-drakes." I seldom or never heard the name of Eider applied to either sex by the natives.

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I saw no individuals of the King Eider, *Somateria spectabilis*, during my stay; but was informed that in the fall they are not unfrequently met with.

MERGUS SERRATOR Linn.—Red-breasted Merganser. "Shell-drake."

Mergus serrator, Aud., Birds Amer. vi. 395; pl. 412. Baird, Gen. Rep. 814.

The Red-breasted Merganser breeds very abundantly along the Labrador coast, while the Buff-breasted, *M. Americanus*, is seldom or never seen. The females place their nests on much the same islands as the Eiders choose, but conceal them more carefully in the tall grass, or among thick scrubby juniper. The nest is rather neatly and compactly formed of mosses, lichens, and dried sea weeds, and warmly lined with down plucked from the breast of the mother, with which the eggs are nearly covered. The full number of these is nine or ten; incubation does not take place until late in the season, as I have found them nearly fresh on the 4th of July. They are regularly oval or ellipsoidal in form, and of a uniform light buff color. When the bird is surprised on the nest, she steals off as quietly as possible, and retires to a considerable distance. While the females are engaged in incubation, and in rearing their young, the males collect in small flocks and keep entirely by themselves, and are excessively shy and vigilant. I found young birds, apparently about a week old, on the 1st of August. Although so young, they were perfectly at home on the water, swimming with ease and grace, and diving with such celerity that it was with difficulty that three or four were procured.

GRACULUS DILOPHUS (Sw.) Gray. Double-crested Cormorant. "Shag."

Phalacrocorax dilophus, Aud., Birds Amer. vi. 423: pl. 416.

Graculus dilophus, Lawrence, Gen. Rep. 877.

As I had no opportunity of visiting any of the colonies of Cormorants, either in Labrador or Newfoundland, I can say nothing concerning their habits. I was informed that there was a "Shag settlement" (either of this species or the *G. carbo*), near Sloop Harbor, a short distance south of Little Mecatina. A fine specimen of this species was presented to me by Capt. Dodge. Both this and the *G. carbo* are universally known as "Shags."

SULA BASSANA (L.) Briss.—Gannet.

Sula bassana, Aud., Birds Amer. vii. 44; pl. 425. Lawrence, Gen. Rep. 871.

On the first of July our proximity to the celebrated Gannet Rocks was clearly indicated by the numbers of these birds seen flying in every direction, engaged in seeking for food, which consists principally or wholly of fish. When satiated with food they are unable to fly for some time. We passed by one in this condition; it flapped heavily along on the surface of the water, trying in vain to rise, yet managing, with aid of wings and feet to proceed with considerable speed. Again, on the 11th of September, on our return we saw many Gannets; but though on both these occasions we passed within fifty miles or less of the rocks, I was denied the pleasure of observing the birds at their great breeding place, and can only speak of their flight and mode of fishing. They fly with firm, powerful beats, alternately sailing and flapping for about equal distances, and their flight is strong and capable of being greatly protracted. When searching for food, they fly slowly along at the height of a few yards above the surface, reconnoitering the water beneath. When a fish is espied, the bird poises an instant in the air and then darts suddenly down, the weight of its ponderous body giving it an impetus which sends it far under water, and raises the spray in a cloud around it. Taking advantage of this habit, Gannets are sometimes captured by fastening a fish to a soft plank, and sinking it just below the surface. The velocity with which the bird descends forces its bill through the wood, and it is thus made a prisoner.

PROCELLAIRA (FULMARS) GLACIALIS Linn.—Fulmar Petrel.

Procellaria glacialis, Aud., Birds Amer. vii. 204; pl. 455. Lawrence, Gen. Rep. 825.

On the 19th of August, while at sea off Belle-Isle, many Fulmars were seen, mostly resting on the water in companies of about a dozen. They generally remained quiet until we approached within sixty or seventy yards, when they would all take flight. In rising from the water the wings are lifted high over the back, the feet drawn under the belly, and with one vigorous spring and a flap at the same instant, the bird launches itself into the air. Its flight is extremely firm, vigorous and protracted, performed with slow measured beats. One individual was overtaken by our vessel, so loaded with food as to be unable to fly; it passed close by the side swimming as fast as possible, near enough to enable me to clearly discern the peculiar character of the nostrils which distinguishes this family of birds.

THALASSIDROMA (OCEANITES) WILSONI Bon.—Wilson's Stormy Petrel. "Mother Carey's Chickens."

Thalassidroma Wilsoni, Aud., Birds Amer. vii. 223; pl. 460. Lawrence, Gen. Rep. 831.

Many of these little oceanic wanderers, and probably also the *Thal. Leachii*, and *pelagica*, were seen every day during our voyage, until we entered the Gulf of St. Lawrence. After that few were observed, and none at all seen off the coast of Labrador. They probably breed along the coast of Nova Scotia. They are very familiar unsuspicious little birds, fluttering hither and thither close around a vessel to pick up the bits of floating garbage which forms their favorite food, and never showing the slightest fear. When about to pick up any floating substance, they raise the wings high over the back, flapping them lightly, and stretch the feet downwards to their fullest extent; the moment they touch the water, the morsel is secured, and the bird is off again in an instant. This attitude is represented to the life in Audubon's beautiful plate of the Least Petrel. Their flight is light, graceful and buoyant in the extreme, and their power of remaining long at a time on the wing is unsurpassed. Three or four are generally seen at a time, though when pressed by hunger they sometimes collect in great numbers about a vessel, eagerly searching for food. On one occasion, about dusk in the evening, we came upon a company of about thirty of them, collected together in a compact flock, sporting high in the air with most graceful movements, like so many swallows over a pond. What had attracted them I could not ascertain. These birds may be caught by means of a hook baited with a morsel of pork; but such is the antipathy of sailors to destroying them, that they are seldom molested. I am informed by my friend, Dr. H. Bryant, of Boston, that he has caught them by allowing a long filament of silk to float in the air behind a sailing vessel, with which the wings of the birds become entangled as they flutter against it. All three species of Petrels are universally known as "Mother Carey's Chickens."

PUFFINUS (ARDENA) MAJOR (Faber) Bon.—Greater Shearwater. "Hagden."

Puffinus cinereus, Aud., Birds Amer. vii. 212, pl. 456.

Puffinus (Ardeana) major, Lawrence, Gen. Rep. 833.

Many Shearwaters were seen at different times during the voyage, generally singly, and always at a distance from land. They appeared to be shy and unfamiliar birds, none approaching near enough to enable me positively to determine the species, whether *P. major* or *anglorum*, though from their size I should suppose the former. On the 19th of August many were seen resting on the water in companies, in the manner of the Fulmars, *Procellaria glacialis*, to which they are nearly allied, both in form and general manners. Both species are known to sailors and fishermen as "Hagdens."

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S. Buffoni Bones

Puffinus (Nectris) fuliginosus Strickl.—Sooty Shearwater. "Black Hagden."

Puffinis (Nectris) fuliginosus, Lawrence, Gen. Rep. 834.

On the 19th of August a few individuals of this easily recognizable species were seen in company with the *P. major*, to which in their habits they are probably very similar. They are known to the sailors as "Black Hagdens."

STERCORARIUS POMARINUS Temm.—Pomarine Jager. "Boatswain."

Lestris pomarinus, Aud., Birds Amer. vii. 186, pl. 451.

Stercorarius pomarinus, Lawrence, Gen. Rep. 838.

But very few individuals of this species were observed. I shot one which was hovering over the stern of the vessel, attracted by some floating garbage. I was surprised to see that it picked up floating substances more in the manner of a Petrel than of a Gull—descending slowly with the feet stretched downwards, and wings elevated, and scarcely touching the water. This Jager is known to sailors and fishermen as the "Boatswain," a name which is also applied to the *S. parasiticus*.

STERCORARIUS PARASITICUS Temm.—Arctic Jager. "Boatswain."

Lestris Richardsonii, Aud., Birds Amer. vii. 190, pl. 452.

Stercorarius parasiticus, Lawrence, Gen. Rep. 839.

I saw but a single individual of this species that I could identify with any certainty. It may be recognized in flight by the peculiar shape of its tail, intermediate between that of *S. pomarinus* and *cepphus* in the length of the middle tail feathers, which project some three inches beyond the others. The name of "Boatswain" is applied to this species as well as to the preceding. All the Jagers have received from the fishermen two very appropriate epithets, in allusion to the peculiar nature of their food, which, as is well known, consists principally of the partially digested fish which they force the Gulls to disgorge.

STERCORARIUS CEPPHUS (Brünn.)—Buffon's Skua. "Marlingspike."

Lestris parasitica, Aud., Birds Amer. vii. 192, pl. 453.

Stercorarius cepphus, Lawrence, Gen. Rep. 840.

Of this most beautiful and graceful of the Jagers I saw but very few individuals, and those only while at sea. It is easily recognized by the long slender feathers, which project six or eight inches beyond the others. From this peculiarity it has received the name of "Marlingspike" from the sailors. Its flight is extremely powerful, firm, even, and performed with regular beats, which propel it with great velocity. It never, I believe, sails. I had not the pleasure of witnessing its attacks upon the Gulls, in which it is said to display courage and intrepidity beyond all other species of the genus.

LARUS GLAUCUS Brünn.—Glaucous Gull. "Ice-gull."

Larus glaucus, Aud., Birds Amer. vii. 170, pl. 449. Lawrence, Gen. Rep. 842.

I saw but very few "Burgomasters" that I could positively identify, on the coast of Labrador, where they appear to be rather rare. They are probably more abundant in higher latitudes. I was informed by an intelligent hunter, who seemed to be acquainted with all the large birds, that there was a "colony" of the "Ice-gulls," as they are called, on some small islands known as the Herrings, about twenty-five miles off the coast, just opposite the entrance of Esquimaux Bay. Unfortunately, however, I had no opportunity of verifying the statement, or of observing the habits of this magnificent Gull during the breeding season.

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LARUS MARINUS Linn.—Great Black-backed Gull. "Saddle-backed Gull."
"Saddler."

Larus marinus, Aud., Birds Amer. vii. 172, pl. 450. Lawrence, Gen. Rep. 844.

The Great Black-backed Gull, which, with the single exception of the Glaucous Gull, is the most powerful of its tribe, is a very abundant bird during the summer months along the whole coast of Labrador. Indeed, this is almost the only locality on this side of the Atlantic where its habits during the breeding season can be successfully studied; the peculiar character of the coast renders it well adapted to the wants of the birds, and it is therefore their favorite breeding place. I was informed that it arrives there about the latter part of May, but with reference to its time of departure, I cannot reconcile my observations with those of Audubon. He states that "by the 12th of that month (August) they had all left Labrador;" whereas, I found them still numerous on the first of September, and I think I never saw so many of both old and young as I did at Henley Harbor on the 30th of August. At what time they really do depart, or whether any remain all winter, I am unable to say. I can account for this and many other discrepancies between our observations with respect to date, only by supposing the season in which Audubon visited the country was a very early one, or that last summer was remarkably delayed.

This species generally chooses for the situation of its nest one of the many small islands, some of them mere rocks jutting out of the water, which everywhere stud the Labrador coast; and contrary to the usual habit of Gulls, it does not congregate in large numbers upon a single island, not more than two or three nests being commonly placed together. It sometimes, however, mixes with the Herring Gulls, for among several hundred of the latter, which circled high over our heads when we invaded their territories, I never failed to detect a few of the Black-backed. I was surprised to find it breeding on some inland ponds, (there also in company with the Herring Gulls,) the nests being placed on small rocks jutting out of the water. In these situations I have thought them less shy than when breeding on islands open to the sea. The nest is large and bulky, composed of moss and lichens scraped into a heap, the cavity apparently formed by the weight of the bird. They are rather shallow for the width, which is nearly or quite two feet externally. The eggs are three, as is usual among the Gulls and Terns, and differ much in size, shape and color, even in those taken from the same nest, some being smaller than the average of Herring Gulls, though they are usually proportionately larger.

On the 4th of July three young birds of this species, apparently but a few days old, were procured and placed in a basket together with a number of Herring Gulls of about the same age. Even thus early they evinced their superiority in size and strength over the other species, for, on looking at them next morning, I found that, their quarters being rather crowded, they had trampled to death every one of the others, and were standing triumphantly over the mass of dead bodies, calling loudly for food. When fed they exhibited the greatest voracity and gluttony, each devouring at a meal three or four capelin some six inches long, which they could swallow whole, and they quarrelled and fought continually for choice morsels. Two of these birds were left in charge of a fisherman at Henley Harbor, and on our return, about seven weeks afterwards, they had grown to fully the size of the adults, and were magnificent birds and great favorites. They kept their plumage perfectly clean and in good order, and were very tame. They were then mottled all over with spots of dusky, most of the primaries, and a subterminal band on the tail, black; bill entirely black, legs and feet light flesh color. This is the plumage in which these Gulls remain the greater part of the first year. One of the birds was much larger and stronger than the other, which it tyrannized over continually and kept in perfect subjection. Both uttered frequently a whining noise, especially when hungry; which state, however, seems to be the normal condition of all Gulls, both young and old.

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The Black-backed Gulls surpass all birds with which I am acquainted in their shyness and wariness, which are so excessive that it is only by stratagem that they can be procured. But two were shot by any of the party, both being killed with guns exceeding in their range those to which the birds were accustomed. They always fly at a great height over the water, and never alight except in open situations which they have previously cautiously examined. Their flight is firm, extremely powerful, performed with measured beats, and is capable of being greatly protracted. They can force their way against the strongest gales. Their food is principally fish of various kinds, though they do not refuse offal of any description. To procure fish they hover at a height of a few yards over the surface, and when one is espied drop heavily upon it, not, however, closing the wings, which are elevated and flapped rapidly to support them. They seldom or never dive, but on such occasions are frequently partially immersed.

During the breeding season the birds are very noisy and clamorous, continually uttering their loud, harsh, rough cries. These are of three distinct kinds; the first, their usual call, is a loud, rough, sonorous "kaw-awk," aptly designated by Audubon as a "furious laugh." They have also a short kind of bark, resembling the syllables "hac-hac-hac;" and in addition to these a loud harsh scream, uttered when their territories are invaded. On the 31st of July I saw a large number of these Gulls collected on the water some ten miles up Esquimaux Bay, where they filled the air with their loud continued cries, which could be distinctly heard at a distance of nearly a mile.

This Gull is universally known to the natives, as well as to sailors and fishermen, as the "Saddle-backed Gull," or, quite as frequently, simply "Saddler." I have never heard applied to it the name of "Coffee-carrier," said to be the title by which it is designated along the coast of New England.

LARUS ARGENTATUS Brünn.—Herring Gull. "Blue Gull."

Larus argentatus, Aud., Birds Amer. vii. 163, pl. 448. Lawrence, Gen. Rep. 844.

The Herring or Silvery Gull is by far the most abundant of the Gulls along the Labrador coast, where it breeds in great numbers, spending the summer months there, and not retiring at least until the second week in September. They were as abundant as ever on the first of that month, when I noticed great numbers of both old and young. I cannot, therefore, comprehend the statement of Audubon, where, in his account of *Larus marinus*, he says: "No individuals of *Larus argentatus* were, to my knowledge, seen on that coast (Labrador) during the three months that I passed there, and the fishermen told us that the 'Saddle-backs were the only large Gulls that breed there.'" On many of the innumerable small islands which form a belt six or eight miles deep along the coast in the neighborhood of Little Mecatina, and southward, immense companies of these Gulls had assembled to breed; and at Esquimaux Bay I found them breeding on the small ponds of the interior. They are every where known to the natives as "Blue Gulls."

On the 4th of July, at Sloop Harbor, I had an opportunity of visiting many islands where these Gulls were breeding in great numbers. On approaching one of the islands, where the birds were sitting quietly on their nests, or walking leisurely about, when we were still several hundred yards distant, they all left their nests, and with loud discordant screams, indicative of their anger at being disturbed, circled high over our heads far beyond the range of our guns. I found the nests placed on the ground in the most irregular manner, apparently without the slightest choice as to situation, except that they seemed to prefer the moss-covered rocks and dry bare spots, the grassy patches being appropriated by the few Eiders that bred on the same island. And here let me remark, that on those low grassy islands where the Eiders were most numerous, but few Gulls built their nests; and *vice versa*, on those bare islands where the Gulls had collected in great numbers, we found but few nests of the

Eiders, though the two birds mix to some extent. The nests were large and bulky, composed of dried grass, moss and lichens scraped into a heap, the cavity formed apparently by the weight of the bird. The eggs, in every instance that came under my observation, were three, but varied surprisingly in size, color and markings, and also considerably in shape. They average rather more than two inches and three-quarters in length, by nearly two in greatest diameter, being thus rounded and obtuse. The ground color varies from a light bluish or greenish white to deep brownish olive; and the spots are of every size and shape, very irregularly disposed. I found eggs at that date in every stage of development, some being quite fresh, but in the majority the embryos were nearly fully formed. On the same day many young were procured, being caught as they skulked and hid beneath stones, or scrambled off over the luxuriant moss. In no instance did I observe any on the nests. At this period they presented a very curious appearance; they were ugly and misshapen, covered with thick whitish down, every where mottled with angular spots of dusky, and, on the whole, looked more like lumps of dirty carded wool than any thing else. When taken in hand they bit and scratched with all their strength, at the same time squealing loudly. Although these cries brought the parents a little nearer, none ventured within shot. On being placed on the water they swam with ease, and appeared to be perfectly at home. Soon after being caught they fed freely on fish and scraps of pork, and uttered constantly a whining noise. The first night, however, they were all trampled to death by some Black-backed Gulls placed in the same basket.

At Henley Harbor, during the latter part of August, many birds of the year were seen. They were at this time readily distinguishable from the adults, for besides being smaller, they were entirely of a deep dusky color, darkest below, and with the bills nearly black. One of these, slightly wing-tipped, showed considerable spirit, biting the finger placed incautiously within its reach, and ejecting the contents of its stomach—principally lance—with remarkably accurate and vindictive aim. The lance seems to be the favorite and principal food with this and other Gulls, and many were always to be seen fishing for them at the mouth of the harbor. To procure them they hover at a height of a few yards over the surface and drop suddenly down when a fish is discovered; never, I believe, diving, though they are often partially immersed. They rise again immediately, and the operation is repeated indefinitely, their hunger never seeming to be appeased. I have seen more than a hundred of these Gulls and the great Black-backed and the Ring-billed fishing together, but never noticed the slightest sign of any quarrelling or difficulty between them.

The Herring Gull requires three years to arrive at full maturity. During the greater part of the first year they are much as described above. The dusky gradually grows lighter, and by the second year the bird is white, mottled with dusky about the head and neck; the tail mostly black, the primaries black, as yet without spots, and the "gull-blue" replacing the grey mottling of the wings and back in irregular patches; the bill light flesh color, with a broad black band near the end. By the next winter the bird is perfect, except some slight mottling about the head and neck, and the following spring is in full plumage. I am enabled to give the above descriptions from specimens sent me from near Hampton, N. H., by Mr. Charles Perkins, shot about the first of December. They must moult very late, as some of these specimens had the quills only partially grown out. I am unable to say whether any breed in the immature plumage.

The abundance of this gull every where during its extensive migrations, cause its voice, flight and general manners to be so well known, that a detailed account of them is rendered unnecessary.

LARUS DELAWARENSIS Ord.—Ring-billed Gull.

Larus zonorhynchus, Aud., Birds Amer. vii. 152; pl. 446.

Larus Delawarensis, Lawrence, Gen. Rep. 846.

Three specimens of this small Gull were obtained at Henley Harbor on the

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Spell this word thus 'tridactyla'?

Not distinct from the *S. heringi*

21st of August. They were all birds of the year, being every where mottled with dull greyish; the primaries and a broad terminal band on the tail black, as is also the terminal third of the bill, the rest being light flesh color. They were shot while busily engaged in fishing for lance, which seemed to form their favorite food. On skinning them, I found the gullet and stomach filled with the fish. They were not at all shy; they permitted a near approach without desisting from their occupation, and the three were shot in rapid succession before the rest became alarmed and flew off. Indeed, I have often thought that the wariness of Gulls is in exact proportion to their size. Thus the little Hooded Gulls, and the Kittiwakes, are so familiar as to hover and sport near the stern of a vessel; the Ring-bills come next, and though not so unsuspicious as the last, are by no means shy; the Herring Gulls, the next in size, are much more watchful and difficult to procure, while the Black-backed and Glaucous Gulls evince such excessive wariness and caution that it is only by stratagem they can be procured. Though the theory may not hold good in all cases, I certainly saw no exceptions to it during my stay in Labrador.

CHROICOCEPHALUS PHILADELPHIA (Ord.) Lawr.—Bonaparte's Gull.

Larus Bonapartei, Aud., Birds Amer. vii. 131; pl. 442.

Chroicocephalus Philadelphia, Lawrence, Gen. Rep. 852.

Many of these beautiful little Gulls were seen at different times during the voyage, though they were perhaps more abundant than elsewhere in the southern portions of the Gulf of St. Lawrence. It is not a little singular that the breeding places of a Gull so common, well known, and widely diffused as the present, should be still unascertained with certainty, and the egg almost unknown to science; yet such is the case. Though my opportunities of observing this species were limited, I could not but be struck with the remarkable familiarity and want of suspicion exhibited by it on all occasions. Numbers would often hover and sport around the stern of the vessel, so close that I could plainly see the dark spot behind the eye which characterizes the immature bird of this species. Their flight on such occasions, and indeed at all times, is extremely buoyant and graceful, in these respects resembling that of a Tern rather than of a Gull. I noticed that, while flying, individuals would scratch the head and neck with their claws, which operation, however, did not seem to impede their flight in the least. At that season (September) none were seen with the head enveloped in the hood which adorns both sexes during the breeding season. Those which I took to be birds of the year, had all a broad subterminal band of black on the tail, and in many the black of the primaries extended unbroken over the shoulder quite to the body.

RISSA TRYDACTILA (L.) Bon.—Kittiwake Gull.

Larus tridactylus, Aud., Birds Amer. vii. 146; pl. 444.

Rissa tridactyla, Lawrence, Gen. Rep. 854.

I met with this interesting Gull on but one occasion, which was on the 3d of August, while sailing up Esquimaux Bay several miles from its mouth. A small company hovered and circled over the boat, and a specimen was secured. Being only wing-tipped, it fluttered to some distance on the water, constantly uttering its piercing screams, which caused its comrades to hover over it for some time, showing their sympathy by loud cries.

STERNA WILSONI Bon.—Wilson's Tern. "Mackerel Gull."

Sterna Wilsoni, Aud., Birds Amer. vii. 97; pl. 433. Lawrence, Gen. Rep. 861.

During my short stay at Rigolet, I saw a good many of these Terns, but found none in any other locality. They possess in the extreme the buoyancy, gracefulness and ease of flight for which the whole family is so celebrated, performing the most beautiful evolutions without the least apparent effort. To obtain
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their food, which, as far as I could ascertain, consisted chiefly of small fish, they hover lightly and slowly over the water at a height of a few feet. When a fish is espied, they nearly or quite close the wings and dart down with great rapidity, and usually go quite under water. With a slight shiver the beautiful birds shake the water off their plumage, swallow the fish as they reascend, and again hover eagerly watching for more. They were not at all shy. They are known to the natives by quite a variety of names. I have heard them called "Rapes," "Steerines," "Pathricks," and "Mackerel Gulls," the last being the name by which they and other Terns are known to the fishermen, given in reference to their forked tail.

COLYMBUS TORQUATUS Brünn.—Great Northern Diver. "Loon," "Loo."

Colymbus glacialis, Aud., Birds Amer. vii. 282; pl. 476.

Colymbus torquatus, Lawrence, Gen. Rep. 888.

This large, powerful and hardy bird is abundant throughout Labrador. It frequents chiefly the numerous ponds formed by the depressions of the rugged surface of the country, near the borders of which the nest is usually placed. Though numbers were seen, yet so shy, wary and vigilant is it, and so expert in eluding pursuit on the water by its extraordinary powers of diving, that not a single one was obtained by any of the party. The most successful method of procuring it is to lie perfectly concealed near the edge of the pond where it may be swimming, and to decoy it within shot by imitating its notes. The imitation, however, must be skilfully executed, or the wary bird will perceive the deception. The notes of the Loon, of all the birds with which I am acquainted, are the most wild, free and independent, seemingly uttered in full knowledge of the security which its wariness and vigor afford. It is from its cry that it derives its name of "Loon," or "Loo," as it is perhaps oftener pronounced by the natives. On the first of August, I came upon a pair of these birds on an inland pond, about three long gunshots wide; they had with them two young birds, apparently but a few days old. Perfectly aware of the safety of their position, they remained close together exactly in the centre of the pond, keeping the young between them, and at intervals sending forth their loud defiant screams. On being fired at, they simply ducked for a moment beneath the surface, and immediately rose again, and I was obliged to leave them to their occupations.

? COLYMBUS SEPTENTRIONALIS Linn.—Red-throated Diver.

Colymbus septentrionalis, Aud., Birds Amer. vii. 299; pl. 478. Lawrence, Gen. Rep. 890.

I obtained two eggs, supposed to be of this species, at Sloop Harbor, on the 4th of July; they were at that date quite fresh. The parent was seen but at a distance too great for positive identification. The nest was placed on the edge of a small pool of water, on a small barren island, and was very rudely constructed of dried rushes matted loosely together, on which the eggs were deposited without the slightest attempt at concealment. They measured two inches and nine-sixteenths in length, by one and eleven-sixteenths in breadth, and were of a uniform dark olive brown, with rather small spots of a very dark brownish black, and a few others of a lighter tint. They were much shorter and more rounded than undoubted eggs of *C. septentrionalis*, their form being regularly ovate, while that of the latter is nearly elliptical. The color was lighter. Very possibly they belonged to *C. Arcticus*.

ALCA IMPENNIS Linnæus.—Great Auk. "Penguin."

Alca impennis, Aud., Birds Amer. vii.; pl. 465. Cassin, Gen. Rep. 900.

Concerning this most extraordinary bird, remarkable in consequence of its not possessing the power of flight, and as being the sole representative in the

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northern hemisphere of the numerous Penguins, (*Aptenodytes*) of the southern, I made diligent inquiry of every one who might be expected to have any knowledge of it. I was the more anxious to obtain some account of it from the fact of its being supposed to be nearly if not quite extinct; its introduction into the fauna of North America resting on very insufficient data. Though none of the natives of Labrador whom I interrogated had any knowledge of it, the fishermen knew immediately to what I referred when I spoke of "Penguins"—as they are called—and all with singular unanimity agreed in designating the Funks, an island off the south-east coast of Newfoundland as the only place where the birds were to be found. Yet I could never find a person who had actually *seen* one of the birds; they had only heard of them as Penguins. But the fact of their all agreeing as to the precise locality where the birds were to be found, seemed to me worthy of attention.

UTAMANIA Leach.

Gen. Ch.—Size moderate. General form stout, heavy, strong, compact; head moderate, neck short and thick, body heavy. Wings moderate; tail short; feet short and strong. Bill lengthened, about equal to the head, densely feathered for half its length, the feathers on the upper mandible extending much beyond the middle of the commissure, and nearly as far as those on the lower; very strong, much compressed, with several transverse grooves which are curved in the upper mandible. Upper mandible much deeper than the lower, with a moderately prominent basal ridge at base of the horny portion; the culmen regularly arched, tip considerably hooked and bent over the lower. Commissure very long, quite straight to near the tip where it is suddenly decurved. Gonyes about straight. Nostrils linear, not pervious, moderately long, very narrow, situated just above the commissure on the feathered portion of the bill, immediately posterior to the lower corner of the basal ridge. Wings fully developed, admitting of flight, reaching beyond the base of the tail; primaries stiff, strong, somewhat fulcate, first longest. Tail short, pointed, rather stiffened, the feathers acuminate, central pair tapering and elongated. Legs short, stout and strong; tibia bare for a short space above the joint; tarsus shorter than the middle toe. Toes three, anterior, entirely united by a membrane. Claws all short, stout, blunt.

Colors.—Neck and upper parts brownish black; beneath white. A conspicuous white line from the eye to the summit of the basal ridge.

The essential characters of this genus lie in the wings, which are fully developed and admit of flight. By this alone it would be entitled to full generic rank, distinct from *Alca* with the type *A. impennis* L., were there no other characters involved. But one species, the *U. torda* Leach, is known, which is found abundantly in the more northern portions of both hemispheres, and is the most characteristic bird of those regions.

UTAMANIA TORDA Leach.—Razor-billed Auk. "Tinker."

Alca torda, Aud., Birds Amer. vii. 247; pl. 466.

Alca (Utamania) torda, Cassin, Gen. Rep. 901.

This, the most characteristic bird of marine arctic fauna, is remarkably abundant throughout the extent of Labrador. While in the Gulf of St. Lawrence, before reaching that country, numbers were every day seen flying rather low over the water, generally in single file, and sometimes passing very close around the vessel. At Esquimaux Bay, the most northern point visited, they were perhaps more numerous than elsewhere, breeding plentifully among the many thousands of Puffins there collected. I was credibly informed that they formerly bred in so great numbers on Backleew Island, off the coast of Newfoundland, that they received the name of "Backleew Birds;" an appellation I occasionally still heard applied to them, though they have entirely deserted the
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island. Another small island on the east side of Esquimaux Bay, has in a like manner been deserted, the birds apparently having retired to the Puffin islands on the opposite side of the Bay. From these facts, I could not but conclude that the birds are slowly but surely retiring before the persecutions of man to more northern and inaccessible regions, though thousands still breed as far and farther south than Little Mecatina and the Murre Rocks.

It was at Sloop Harbor, on the third of July, that I first formed acquaintance with the Razor-billed Auks. As we dropped anchor in that sheltered cove, a large company of them were sitting at a little distance on a flat rock, crowded closely together, and all facing towards the sun, then low in the skies. They rested perfectly upright on their rumps, occasionally twisting their bodies in a curious jerking manner. No sooner, however, had our boat touched the rocky shore than they all instantly took flight and dispersed either singly or in small flocks. Although so watchful, they seemed to be not at all aware of the nature of the danger that threatened them, for they flew directly towards or past us as often as in any other direction, and numbers were easily shot. On the following day, the fourth of July, while searching for the eggs of the Eiders and Herring Gulls, I had abundant opportunity for observing their flight and general manners, for they bred in considerable numbers in the crevices of all the rocky islands in the vicinity.

Although the Razor-bills cannot be approached while sitting on the rocks, yet while flying they evince such a want of caution, or rather so much stupidity, as to fly continually directly over and past a boat at such short distances that they are easily shot down. But they are strong and tough birds and carry a great deal of shot, requiring a heavy charge to kill them. I have occasionally seen one fly off, apparently as strong as ever, leaving a cloud of white feathers floating in the air. When only one wing is broken they dive with great ease and celerity, and are then difficult to secure. When shot at and not touched, they open and shut the tail, swerve from their course and quicken their flight.

Though they are, I believe, entirely mute while flying, on being wounded and taken in hand they utter a loud, rough, hoarse cry, at the same time throwing themselves on their backs, fighting and scratching most furiously. They bite with great force, their strong hooked bills enabling them to inflict a severe wound, and they will suffer themselves to be held up by their bite before they will relax their hold. The name of *Razor-bill* is certainly a most appropriate one.

The flight of this bird is firm, well-sustained, very swift, and, considering the heavy body and short wings, very powerful. It is performed with short, quick, vigorous flappings. They never sail; but on one occasion I saw an individual endeavor to flap its wings with a slow, measured stroke. It was but a few yards, however, and it at once found that mode of flight impracticable. On the water they swim lightly and elegantly with the head and tail elevated, exactly as represented in the right hand figure of Audubon's life-like plate. When well stewed, their flesh is by no means poor, being, though rather tough, well flavored, and not possessing the slightest rank or fishy taste. We all ate them whenever they could be procured.

The situations chosen by the Auks for their breeding places are generally the rocky, precipitous islands where there are many caverns and fissures, in which the eggs are deposited, often together with those of the Black Guillemot, *Uria grylle*. I have never found more than a single egg, though in the face of such authority as Audubon to the contrary, I should not like to assert that two are never laid. I have great pleasure in being able to corroborate the statement made by this distinguished ornithologist with regard to the sagacity displayed by the birds in protecting their eggs from the wet. When deposited in damp fissures, through which the water is continually percolating, a layer of small pebbles is placed beneath the egg, to keep it from the moisture, but in sufficiently dry situations, where the caution is no longer necessary, the birds never undertake the additional labor.

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The eggs, though differing considerably in their markings, are comparatively uniform in size and shape, being usually about three inches in length by a very little less than two in breadth. The ground color is either pure white or with a creamy or light bluish tinge. The spots are of different shades of umber brown, very often attracted into a ring around the larger end, but sometimes pretty uniformly distributed. They vary in size from mere points to large blotches. The eggs, though thus differing among themselves, still always preserve a certain character distinct from that of the Murre, through all the endless variations of the latter. They are smaller, their shape is less elongated, they are never of a green ground color, and are never fantastically streaked and lined—the more usual pattern among those of the Murre.

I was not a little surprised, when I visited the Puffin Islands, to find there the Auks also, breeding in considerable numbers. I estimated that a fourth or fifth part of the many thousand birds breeding there were of this species. On the north side the island is rocky and precipitous, and there the birds principally collected; yet on all other sides they were mixing indiscriminately with the Puffins, and laying their single egg in the deserted holes of the latter. In these holes, where the earth was comparatively dry and warm, not a vestige of a nest of any kind was found, the egg being deposited on the bare ground. Associated so intimately, I never saw the slightest semblance of any difficulty between the two species, although in some instances they were incubating in contiguous holes. At that date (July 25th) some of the eggs were quite fresh, and I found young birds, from which is to be inferred that the species is not very exact as to the time of laying its eggs.

I noticed another fact that I do not recollect of having seen recorded; it is, that the Auks associate in considerable numbers with the Murres. While passing the well-known rocks where the latter were breeding in tens of thousands, among the countless flocks flying constantly around us, we never failed to detect some of the Auks, either in flocks by themselves or mixing indiscriminately with the Murres. Although the two birds are identical in size and colors, they could always be distinguished, even at the distance of a long gun shot, by their bills; the long, slender and pointed ones of the Murres contrasting distinctly with the short, thick, seemingly truncate bills of the Auks. As a natural consequence of this intermingling, the eggs must of necessity be confounded; yet I do not think it would be difficult to distinguish with tolerable certainty the two kinds, by the differences already pointed out.

It would seem the Razor-billed Auk is capable of conforming its habits in a remarkable degree to suit varying circumstances, while carrying out the great law of reproduction. Its eggs are deposited in fissures and caverns with the Black Guillemot, on the bare rock with the Murre, and in holes in the ground with the Puffin. The time of depositing its eggs, and their number, (?) also vary. The fact of its associating in perfect harmony with other species to the extent which it does, indicates the possession of a remarkably peaceful disposition. It is known universally to all fishermen and eggers, as well as to the natives, by the singular name of "*Tinker*." Its proper name I never heard applied to it.

MORMON ARCTICUS? * Illiger.—Arctic Puffin. "Parrakeet."

Mormon arcticus, Aud., Birds Amer. vii. 238, pl. 464. Cassin, Gen. Rep. 903.

The habit of collecting in immense numbers at particular localities during

* A series of Puffins recently received from Europe by the Smithsonian Institution, has raised a doubt with regard to the specific identity of the American bird with the true *M. arcticus* of Europe. I have therefore thought it proper to give the name *arcticus* with a query. It is also believed that there is on the Labrador coast an undescribed species of *Mormon*, in addition to the present. Prof. Baird is at present investigating the subject, the results of which will soon be published in a monograph.

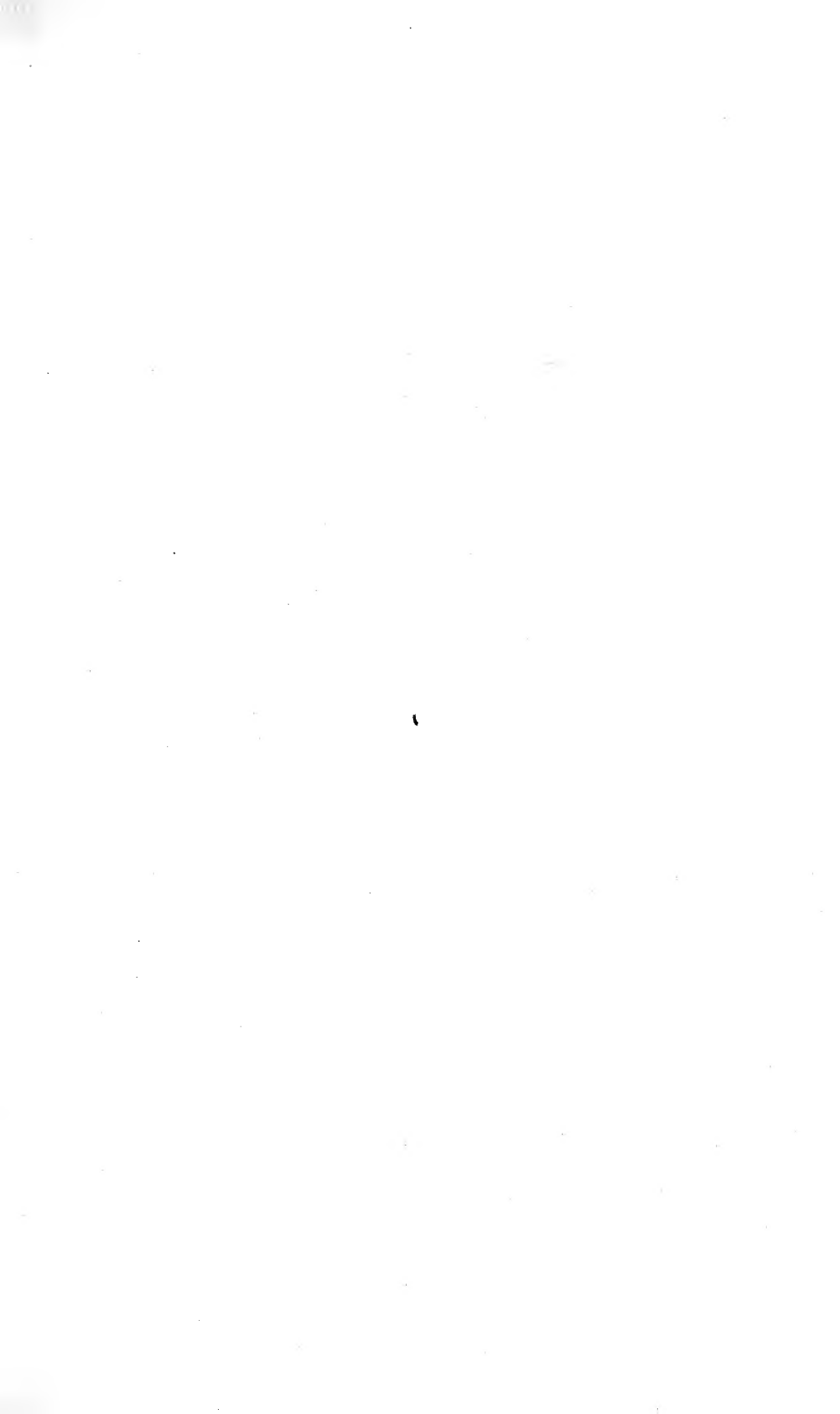
the breeding season, so characteristic of the whole family of *Alcidae*, is a trait exhibited in the highest degree by the species now under consideration. With scarcely the exception of the Common Murre, no bird of the family shows so pre-eminently gregarious a disposition as does the Arctic Puffin. Collecting, as it does in thousands, on particular islands of small extent, it becomes a matter of astonishment that food can be procured in sufficient quantity to sustain them, or that each pair can find a place to deposit its egg. The pertinacity, too, with which they cling to the immediate vicinity of their breeding place is remarkable. But a very short distance from an island where there are thousands, it is a comparatively uncommon thing to see a Puffin. The most extensive of these breeding places appears to be an island near the harbor of Bras-D'or, visited by Audubon in 1833, of which he has written so graphic and instructive an account. The one, however, that I had an opportunity of visiting cannot be much behind it in point of the numbers of the birds breeding on it; and during a stay of three days I had ample opportunity of examining the island and noting the manners of its curious population. My visit was on the 25th, 26th and 27th of July. Let a short extract from my journal describe our approach to the island.

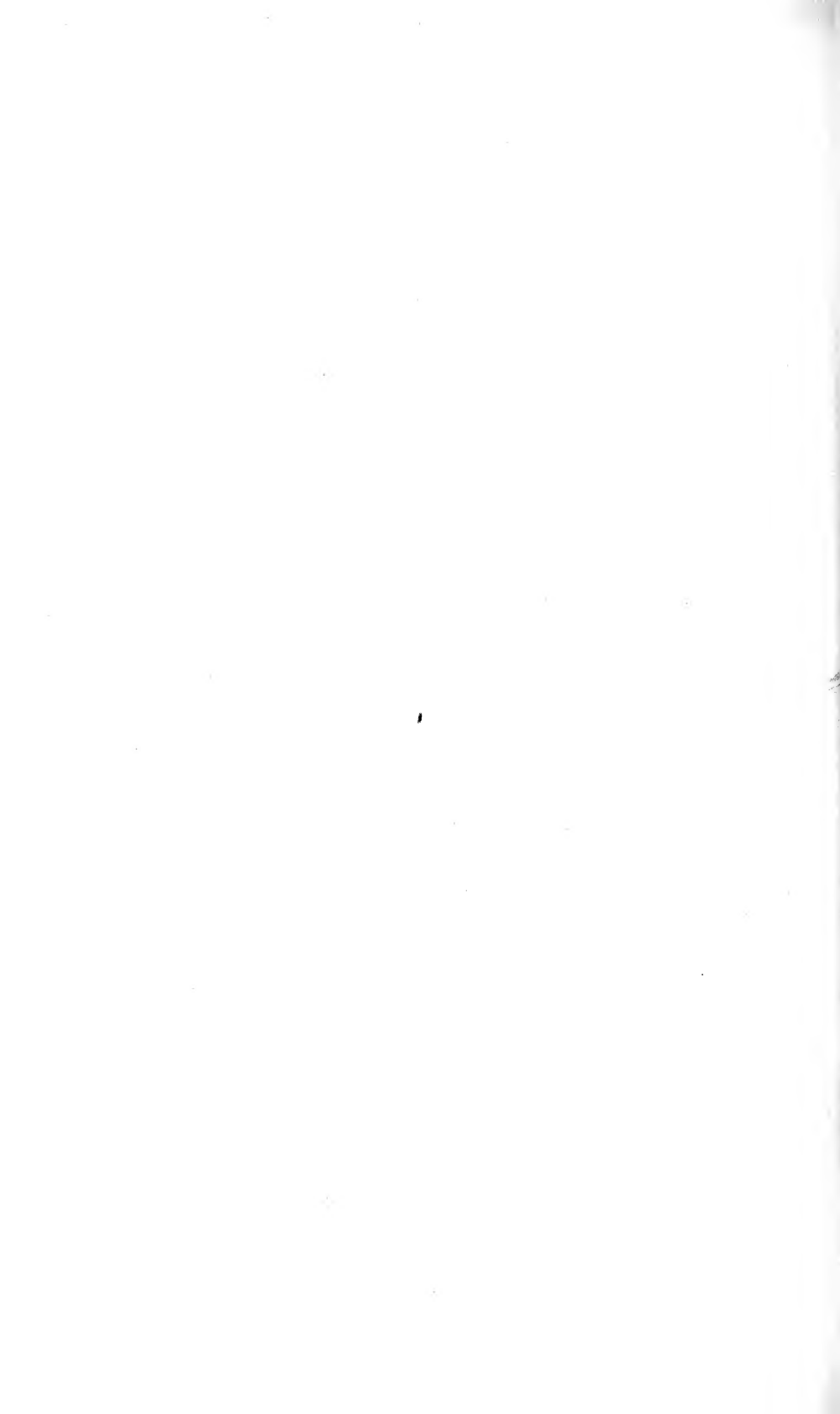
"We were now within less than a mile from the island, towards which all eyes were anxiously turned, and still not a bird met our gaze. But a few minutes more, however, and they commenced to appear, flying round the boat or resting on the water; all were 'Parrakeets' and 'Tinkers,' except now and then a solitary 'Turre.' They were tamer than I ever saw birds before, almost flying between the masts of our little whale-boat; it was hard to restrain from firing. As we rounded the island close to the shore, they came tumbling out of their holes by hundreds, and with the thousands we disturbed from the surface of the water, soon made a perfect cloud above and around us, no longer flying in flocks, but forming one dense continuous mass. And yet not a gun had been fired."

The Parrakeet Islands are three in number, lying along the western shore of Esquimaux Bay, just at its mouth. The one I visited is the innermost as well as the largest, though the others are equally crammed with the birds. It is about a mile in circumference; in shape almost a perfect semicircle, with two points stretching out and enclosing a snug cove, where only can a landing be effected with safety. It is abrupt and precipitous on the three sides, the fourth sloping gradually down to the cove. The top is nearly flat, and covered with a rather luxuriant growth of grass, the soil being enriched by the innumerable droppings of the birds. The three sides in which the holes are dug are so steep and precipitous that it required considerable agility to scramble along them, the danger of falling into the water below being increased by the slipperiness of the soil, worn smooth by innumerable feet, and continually moistened with ordure. The sides are composed of soft loamy earth, with rocks of every size and shape jutting out in all directions, and afford the most favorable possible conditions for the excavation of the burrows. The fourth side between the two points is composed mostly of masses of rock, in the crevices of which the Auks chiefly deposit their eggs, though they very often appropriate the deserted holes of the Puffins.

The holes in the ground in which the Puffins deposit their eggs,—a habit, as far as I am aware, entirely peculiar to the genus in this family of birds—are excavated by the birds themselves, an operation for which their powerful beaks and long strong and sharp claws admirably adapt them. They extend nearly or quite in a horizontal direction, and are subcircular in shape, with the diameter scarcely larger than is necessary for the free passage of a single bird. They vary much in length, but the majority are not so deep but that the egg may be reached by thrusting in the arm to its fullest extent. Their course is seldom in a straight direction; they curve and wind in a most tortuous manner, many burrows being connected together by winding passages. The en-

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trances to the holes are worn flat and smooth by continual paddling from the feet of the birds, and, as well as the whole sides of the island, are moist and slippery with the ordure. The sides of the island from just above high water mark to the very top, are perforated with innumerable holes, but on the top itself not a single burrow is to be seen. At the further extremity of the hole, which is usually a little enlarged, the single egg is deposited, always a slight bed of dried grasses being first arranged to keep it from the moist earth. I have indeed found eggs lying on the bare ground near the entrance of the burrows, whither they had apparently been dragged by the bird as it hurriedly made its exit; but in no instance did I find one in its usual position at the further extremity, that was not upon a layer of grass. I noticed this fact the more particularly, since Audubon expressly states that no nest whatever is formed for the reception of the egg. Without for a moment doubting the accuracy of that great naturalist's observations, the present case is only additional proof of the extent to which the habits of birds are influenced by circumstances; the position of nests, the number of eggs, &c., varying much, and the food changing in a measure with every change of locality. The eggs measure two and a half inches in length, by one and three-fourths in greatest diameter, varying very little from this standard; in shape, which is a rather rounded ovate, they differ in being more or less obtuse at the smaller end. The greatest diameter is nearly opposite the middle. The shell is usually more or less granulated, but differs much in the extent of the granulation. The color is white or whitish, varying from nearly pure to a brownish hue, the latter color being in the shell, and not caused by soiling or discoloration. They are marked with obsolete, sometimes almost imperceptible dots, spots, and lines of light purplish, mostly attracted into a ring around the large end. There are sometimes a few irregular splashes of very light yellowish brown. Audubon is clearly in error when he states that they are simply "pure white." At that date, (July 25th) they all with few exceptions contained young about to be hatched.

Another extract from my journal will portray, perhaps more graphically than could be done in any other style, the manners of the birds on being invaded. "Hardly had our boat touched the shore than we leaped out, guns in hand, and at once scattered over the island. As we advanced along the sides, the affrighted birds darted past us like arrows, issuing from their burrows beneath our feet and around us, and all making directly for the water. Those already disturbed flew in every direction above us, while thousands rested on the water in a dense mass at a little distance. I took my stand on a flat rock, and in less than an hour a pile of Puffins, more than I could carry, lay at my feet. Shortly after I commenced firing the birds formed themselves into an immense circle, of a diameter of perhaps a third of a mile, one point of which just grazed the island. It was astonishing to see with what precision this circle was preserved, each bird flying directly in the wake of the one that preceded. I had merely to stand facing the advancing birds, and no better opportunity for continual slaughter could be desired. I now realized what I had been told, but had found hard to believe, that a wagon might be filled with the birds by a tolerably expert marksman, shooting them at just such a moment that they should fall into it. The poor things seemed not at all aware of the nature of the danger that threatened them; flying so close past me that I could almost strike them with my gun. During the continual firing the birds would emerge from their holes every minute or two; and after shooting for half an hour on one spot I was not a little surprised to see two or three start out almost from between my feet, and in great fright make the best of their way down to the water. On emerging from the holes the birds generally looked around for a moment to see what was the matter, and then in great haste fluttered and tumbled down to the water below, in which they immediately dived, and swimming swiftly under water reappeared at some distance. From the countless thousands flying
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around me I did not hear the slightest note of any kind; they flew in perfect silence. When wounded, if they fell on the land, they immediately ran and threw themselves into the nearest hole, if in the water, they dived and swam as far under the surface as their strength allowed. I observed not the slightest indication of any sympathy for those wounded or killed on the part of the other birds, as stated by Audubon. The survivors did not notice them in the least, though they lay exposed everywhere on the rocks, and floated about on the water."

The flight of the Puffin when once on wing is firm, well sustained, very swift and performed with short, quick, vigorous beats. When it takes flight from a rock whence it can project itself into the air, it at once supports itself without difficulty; but when on the water it is obliged to flap over the surface for several yards before it can rise on wing. When getting under weigh, the feet are extended backwards and outwards on each side of the tail, which is spread, but they are soon drawn up, and the tail closed. When shot at and not touched, like the Auks they swerve from their course, open and shut the tail, and extend the feet. When standing on a rock or at the entrance of their burrows, where they alight without the slightest difficulty, they present a peculiarly grotesque appearance, such as is afforded by no other bird. Their short thickset bodies, big heads, enormous brightly colored bills and red legs, give them a comical appearance, which is enhanced by their upright position and the odd nature of their movements, as they twist the head and jerk the body in various directions. Though on a three days acquaintance we were somewhat familiarized with their movements, we could never quite restrain a laugh when we saw one thus "attitudinizing" on the edge of a rock.

When taken in hand the Puffin utters a loud, hoarse, croaking scream, at the same time fighting most furiously. They are capable of inflicting a very severe wound with their powerful bills, easily drawing the blood. Their long and strong inner claw is also an effective weapon, so that by dint of scratching, biting, and struggling, they proved difficult customers to manage. The most courageous of our party seldom held one more than a few moments before he was glad to set it at liberty. Indeed, their rage at being caught is ungovernable, that two held together attacked each other with fury, and a single one held up by the wings, bit its own wing and scratched its own face most energetically.

I could not but admire the beautiful provision of nature with regard to furnishing this bird with the means of excavating its burrow with facility. The inner claw of each foot is very long, much curved and excessively sharp. To preserve it so, when not in use, it always lies perfectly flat, so that the point does not rest on the ground. In digging and fighting, however, it is held upright, and then becomes a very effective weapon. The bill, always so remarkable in form and color, varies much with age in size and shape, and also in the extent of the ridges and furrows. The color, however, is always pretty constant; and a description of its tints, with those of the eyes, feet, &c., taken from a very perfect fresh bird, may not be uninteresting, as the color fades much in dried specimens. Base of the bill and first ridge dull yellowish white, between the two dark bluish ash; rest of bill bright vermillion red, the tip of the lower mandible and the two last furrows being yellowish white. Inside of mouth and warty rugose excrescences at the base of the commissure bright chrome. Iris hazel, eyelids vermillion, the short processes above and below the eye bluish ash. Legs and feet bright orange red, claws black.

I was much surprised while at Rigolet, to see a great number of Puffins flying over the surface of the Bay in large compact flocks. Whether they had come from the island described, or whether there was another island in the immediate vicinity, I am unable to say, though I think the latter most probably the case. These birds proved rather shy, avoiding our boats with some care. The fact of their being found so far inland is worth recording.

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The flesh of the Puffin, though not ill-flavored, is so excessively tough as to be eatable only in cases of necessity. It is most commonly known as the "Parrakeet," (Paroquet) as it is pronounced; they are also called "Sea-parrots," and are sometimes designated by their proper name of Puffin.

URIA (URIA) GRYLLE Latham.—Black Guillemot.—"Sea-pigeon."

Uria grylle, Aud., Birds Amer. vii. 272, pl. 474.

Uria (Uria) grylle, Cassin, Gen. Rep. 911.

The history of the Black Guillemot is an interesting one. In the extraordinary changes of plumage it undergoes, in its extensive breeding range, and the many entirely peculiar habits it possesses, it differs widely from all birds of the family on the eastern coast of America. The most remarkable fact connected with it is, that it breeds abundantly in the interior of the continent, being found in great numbers on the southern shores of Hudson's Bay, while the other species of *Alcidae* are probably without an exception exclusively marine. It is very plentiful throughout the extent of Labrador, where many remain during the whole winter; in fact, with the exception of the Auks, Murres, and Puffins, which congregate in such immense numbers at certain places, it is the most common and generally distributed bird, breeding along the whole coast. I obtained eggs at Sloop Harbor, the first locality visited, and at Groswater Bay they were still more abundant. Audubon speaks of finding them at the Magdaline Islands, and I have seen specimens from Greenland, which, with the fact of its breeding plentifully on Hudson's Bay, prove for it a breeding range remarkable among the *Alcidae*. It is a hardy bird, remaining throughout the year in Labrador. The changes of plumage which it undergoes are very great. About the middle of August, or as soon as the duties of rearing the young are concluded, the change commences, with the moult. In a very short time they have become most curiously mottled with pure white, and the change goes on till the body becomes almost entirely white—the wings and tail mostly remaining black. In this state of plumage, which is shared also by the young for the first year, they continue during the winter, and until the breeding dress is again assumed the following spring. While undergoing the change, they are entirely unable to fly, from the loss of the primary quills.

The Black Guillemot chooses for its breeding place the most rocky, broken, and precipitous islands along the coast, in the numerous fissures and caverns of the eggs are deposited. Wherever there are rough jagged rocks sloping down in huge masses to the water, there the Black Guillemot will always be found breeding in greater or less abundance. Though they never congregate at one spot in such immense numbers as the Puffins and Murres are wont to do, yet there are some islands which, from their peculiar adaptation to their wants, are taken complete possession of by the birds. These islands, wherever found, are known to the natives as "Sea-pigeon Islands." Here they breed in great numbers, every fissure and cavern being occupied by one or more pair. They show marked preference for the most tortuous and deepest crevices, at the extremity of which the eggs are deposited. They are most usually two in number; never more, so far as my own observations extend; but as Audubon, on the best of authority, personal observation, expressly states that the number is sometimes three, the fact must be considered as established. They measure nearly or quite two inches and three-eighths in length by one and five-eighths in greatest diameter, and are, in size and shape—which latter is nearly elliptical—pretty constant, much more so than is usual in the family. The shell is rough; its ground color a very light greenish or earthy white; it is irregularly spotted and blotched with two shades of brown, one very dark, and with light purplish. The markings are mostly attracted into a ring about the larger end, though they vary much in their disposition, sometimes being very regularly distributed over the whole surface. The egg is never, I 1861.]

believe, streaked in any manner. Towards the latter part of June or 1st of July the eggs are laid, and the young appear the second or third week of that month; but the precise period of incubation I am unable to state. When surprised on the nest, the parent, if she be not already there, creeps to the furthestmost extremity of the fissure, and, as if aware of the safety of her retreat, cannot be induced to come out. But if it becomes aware of an approach before the entrance be obstructed, it invariably takes flight, making directly for the water. Should the fissure be so shallow that the bird may be reached by the hand, it sits quite still, even allowing a noose to be put over its head without struggling, and on being taken in hand shows a gentleness of disposition quite the opposite of the Puffins. It merely pecks at the hand once or twice feebly, and yields itself in silence and without struggling. The young at first are entirely of a dull sooty black, and have not the beautiful vermillion legs of the adult, these being of a dusky hue. They constantly utter a low, plaintive "peep," when requiring attention from the parent. On a warm, sunny day, all the birds will sometimes leave their eggs and young, and collect in large flocks on the water at a little distance from the shore, where they wash and plume themselves. So completely are the nests deserted on these occasions, that on an island nearly a mile in circumference, I have found but a single bird on its nest, though hundreds rested on the water at a little distance.

The flight of the Black Guillemot is firm, even, and direct, though not powerful; performed by quick flappings, when the white of the upper and under surfaces of the wings shows as one continuous spot. They invariably, except when going to and from their eggs, fly very low over the water; I never saw one more than a few feet over the surface, and they usually just clear the tops of the waves. They are rather timid and wary, seldom allowing an open approach within shooting distance, and always when flying, wheeling and changing their direction just at the right moment. The best way to procure them is to sail or row directly down wind upon them, since, being unable to rise from the water except against the wind, they are forced to fly in such a direction as to afford a good shot. They often dive on being approached, when by noting their direction and pursuing in haste, they may be shot the instant they rise, or as they fly off. They are most expert divers, easily eluding, when on the watch, the shot intended for their destruction. When shot at in flight and not touched, they generally plunge at once into the water, as if killed, which idea however is quickly dispelled by seeing them reappear at a little distance and take flight. Except near large breeding places they are seldom seen in companies of more than a dozen, and far oftener they are to be found singly, or two or three together. They are universally known to the natives and fishermen as "Sea-pigeons," the only name I ever heard applied to them.

URIA (CATARACTES) LOMVIA, Brünn.—Foolish Guillemot. Murre. "Turre."

Uria (Cataractes) lomvia, Cassin, Gen. Rep. 913.

On the sixth of July we passed a celebrated breeding place of these birds, known as the "Murre Rocks," situated a few miles north of the harbor of Little Mecattina. They are two small, rocky and very precipitous islands, almost entirely destitute of vegetation; the sides, which rise abruptly from the sea, are composed of successive tiers or ledges of shelving rock, on which the eggs are deposited. The birds at this date were breeding on the islands by tens of thousands; their number was truly incredible, and yet I was informed that these were rather fewer than usual. As we drew near the island, the air seemed darkened with the masses that wheeled and circled overhead; while on every flat rock and ledge the birds were densely packed in rows and tiers, each sitting, or rather standing (for they seemed to rest perfectly upright on their rumps) sentinel over its solitary egg. The birds all seemed to be facing in the same direction, and it was with great pleasure that I noticed the curious

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effect mentioned by Audubon in his interesting account. The white breasts of the birds appeared in marked contrast to the dull grey of the rocks, with which the color of the head and neck so well harmonized as to cause the birds to appear deprived of those very indispensable portions. To my great disappointment, I was not permitted to land and examine the islands and their inhabitants; our captain, as on other occasions, paying no regard to the wishes of the passengers. Again, on our return, though we passed between the islands, not for an hour, even, would he delay, to enable me to notice the birds or to obtain specimens. I am therefore unable to give any account of the manners of these most interesting birds. A barrel of eggs was procured, and placed at my disposal.

The egg of the Foolish Guillemot is notorious among that of all other birds, for the variations it presents in size, shape, color and markings, but more especially the latter. From a large number of specimens, I found the average size to be a very little over three inches and one-fourth in length, by two in greatest diameter, while the greatest difference in length was five-eighths of an inch. The diameter was much more constant, differing but one-fourth, thus causing the variations in shape to be exceedingly great. The ground color of the egg varies from a bright cream color to pure white, and then passing through earthy, greyish, bluish and greenish-white to light green, is found of every shade of the green to the very darkest. The more usual color is some shade of green. The markings of the cream colored and white specimens are usually spots and blotches of different shades of brown, pretty uniformly disposed over the whole surface. Eggs of this type bear the closest resemblance to those of *Utamania torda*, but may usually be easily distinguished by their larger size and more pyriform shape. The prevailing pattern of coloration among the light earthy and bluish-white eggs is a ring of spots around the larger end; these very closely resemble those of *Uria grylle*, as far as color is concerned. The green eggs present an infinite variety of patterns, which it would be useless to attempt to define; they are oftener streaked than blotched, the lines being angular and sharply defined, crossed and recrossed in the most fantastic manner. Occasionally a pure white egg is met with, and I have seen some that had much the peculiar pattern and appearance of those of *Meleagris gallipavo*.

The "egging," or traffic in the eggs of the Murre as at present carried on, is on systematic principles, and furnishes constant employment during the summer to men who make it their profession. The method pursued to procure the eggs fresh is singularly unique, but entirely successful. They land on one of the islands and break every egg that they can find upon it; the next day, repairing to the spot, all those eggs found cannot but be fresh. By collecting these, of course the birds are prevented from sitting, and thus any quantity of eggs may be procured. Notwithstanding the wholesale system of destruction thus carried on against the birds, they are still to be found in prodigious multitudes; yet it is remarked by all those who have visited the coast for a number of years, that their numbers are slowly but surely decreasing under this incessant persecution, which not even their myriads enable them to withstand. I was informed that there is a law which forbids the collecting of the eggs, but if so, it has very little practical effect.

The present species, as well as the *U. ringvia* and *U. arra*, is known to the natives and fishermen as either the "Murre" or "Turre," the latter being perhaps the more usual appellation. This name is also applied to the *Mergulus alle*, which is known as the "Little Turre," or sometimes as the "Little Noddie." On the coast of Maine it is also called "Ice-bird."

A letter was read from Dr. Jas. C. Fisher, resigning his office as Librarian of the Academy, on account of absence from the city in military service for the suppression of rebellion.

On motion the resignation was accepted.

It is evidently congeneric with *P. crassipes*, the type of *Pachygrapsus*. We have specimens from Constantinople in the Smithsonian Museum.

CYRTOGRAPSUS ANGULATUS.

Cyrtograpsus angulatus Dana, U. S. Exploring Expedition, Crust. i. 352, pl. xii. f. 6.

In our specimens the ambulatory feet are ciliated toward their extremities. "Rio de la Plata," Capt. Page's Expedition.

METASESARMA TRAPEZIUM.

Sesarma trapezium Dana, loc. cit., i. 354, pl. xxii. f. 8.

An examination of Prof. Dana's original specimens shows that this species belongs to M. Edwards' genus *Metasesarma*.

GEOHELPHUSA BERARDI.

Thelphusa berardi Savigny, "Egypte" Crust. pl. ii. f. 6. M. Edw., Hist. Nat. des Crust. ii. 14; Mel. Carcin. p. 178.

We have specimens from Egypt, brought home by Mr. Marsh.

POTAMOCARCINUS DENTICULATUS, n. sp.

The following description will serve to distinguish it from *P. armatus*, the only species hitherto known.

Carapax flattened, obsoletely granulated. Antero-lateral margin denticulated; little teeth about eighteen in number on each side. Meros or fourth joint of the external maxillipeds broad, almost quadrate. Length of carapax in a male, 0.84; breadth 1.22 inch.

In the river Atrato, New Grenada. Atrato Exploring Expedition.

DILOCARCINUS PICTA.

Dilocarcinus pictus M. Edw., Arch. du Mus. vii. 181, pl. iv. f. 2.

Paraguay, Capt. Page's Expedition.

Dr. Randall's genus *Orthostomas* was founded on a species of M. Edwards' subsequently constituted *Dilocarcinu*. This name has, however, been used twice previously in Articulata.

DILOCARCINUS PAGEI, n. sp.

A species closely allied to *Dilocarcinus spinifer* M. Edw. It differs, however, in the following particulars: The surface of the carapax is more even, the limits of the regions being scarcely traceable. The seven teeth of the antero-lateral margin are arranged as in *Dilocarcinus castelnaui* M. Edw., the second tooth not being distant from the angle of the orbit. The inferior margin of the orbit is armed with six very sharp, slender spines. The inferior margin of the meros-joint in the chelipeds is four-spined; while the joint preceding it is one-spined. From *D. castelnaui*, which it resembles in the shape of the carapax, etc., it differs in having five sharp spines at the antero-lateral angle of the buccal area.

Paraguay, Capt. Page.

A Monograph of the Genus *ÆGIOTHUS*, with descriptions of new species.

BY ELLIOTT COUES.

Since the publication, in 1858, of the Ninth Volume of the Reports on the Pacific Rail Road Surveys—the General Report on the Birds—the amount of material has steadily and rapidly increased, until there is, at the present day, more than double the number of specimens in the museum of the Smithsonian. 1861.]

This great accession of new material in all departments of Ornithology, has, of course, proportionally increased our knowledge of the birds of North America, both as regards the number of species inhabiting the continent, and their geographical distribution; and has furnished the means of making many additions, and some corrections, to the General Report. But, perhaps, to no single group of birds have there been so many added, as to that one to which it is proposed to devote a few pages.

At the time of the writing of the article on *Ægiothus*, in the General Report, there were but eight specimens of the genus in the collection, and those representing but a single species. The series of *Ægiothi*, from an examination of which the present paper was prepared, consists of more than one hundred specimens, from very various localities in America, Europe and Greenland, and comprises all the known species, except *A. rufescens* and *Holbölli*, and is, moreover, particularly rich in the species described here for the first time. The very large series of *Ægiothus exilipes* were mostly procured by Messrs. Robert Kennicott and Bernard R. Ross, though some were received from Donald Gunn, Esq. The series of *A. fuscescens* were mostly obtained by ourselves in Labrador. The specimens upon which the *A. rostratus* is founded were kindly furnished for examination by the Copenhagen Museum, which also supplied the examples of *A. canescens*, and of the European type of *A. linarius*.

The above remarks seem necessary to prevent the doubt that might otherwise very naturally arise, that at this late date there could remain undescribed three species of so well known a genus as the present. We may be allowed to add, that we have formed our opinions only after long study and deliberation, as well as consultation with several very eminent ornithologists.

Though the four described species of *Ægiothus* are well known, the synonymy of some of them is in a state of considerable confusion. For this reason, and for the sake of showing more clearly the relationships of the new species, it has been deemed advisable to present a complete monograph of the genus.

ÆGIOTHUS Cabanis.

Fringilla sp. Linnæus, 1766, et auct. antiq.

Passer sp. Pallas, 1811, nec auct.

Spinus p. Koch, nec Boie, 1826.

Linota p. Bonaparte, 1838.

Linaria, Cuvier, 1817, nec Bechst., 1802, cujus typus *Fring. cannabina* Linn.; nec *Linaria* Tourn. quæ plant. gen.

Acanthis, Bonaparte, 1850; nec Bechst. 1802, cujus typus *Fring. carduelis* Linn.; nec Meyer, 1822, (typus idem): nec Keys. et Blas. 1840, cujus typus *Fring. spinus* Linn.

Ægiothus, Cabanis, Mus. Hein. 1851, 161. Typus *Fring. linarius* Linn., Baird. Gen. Rep. 1858, 428.

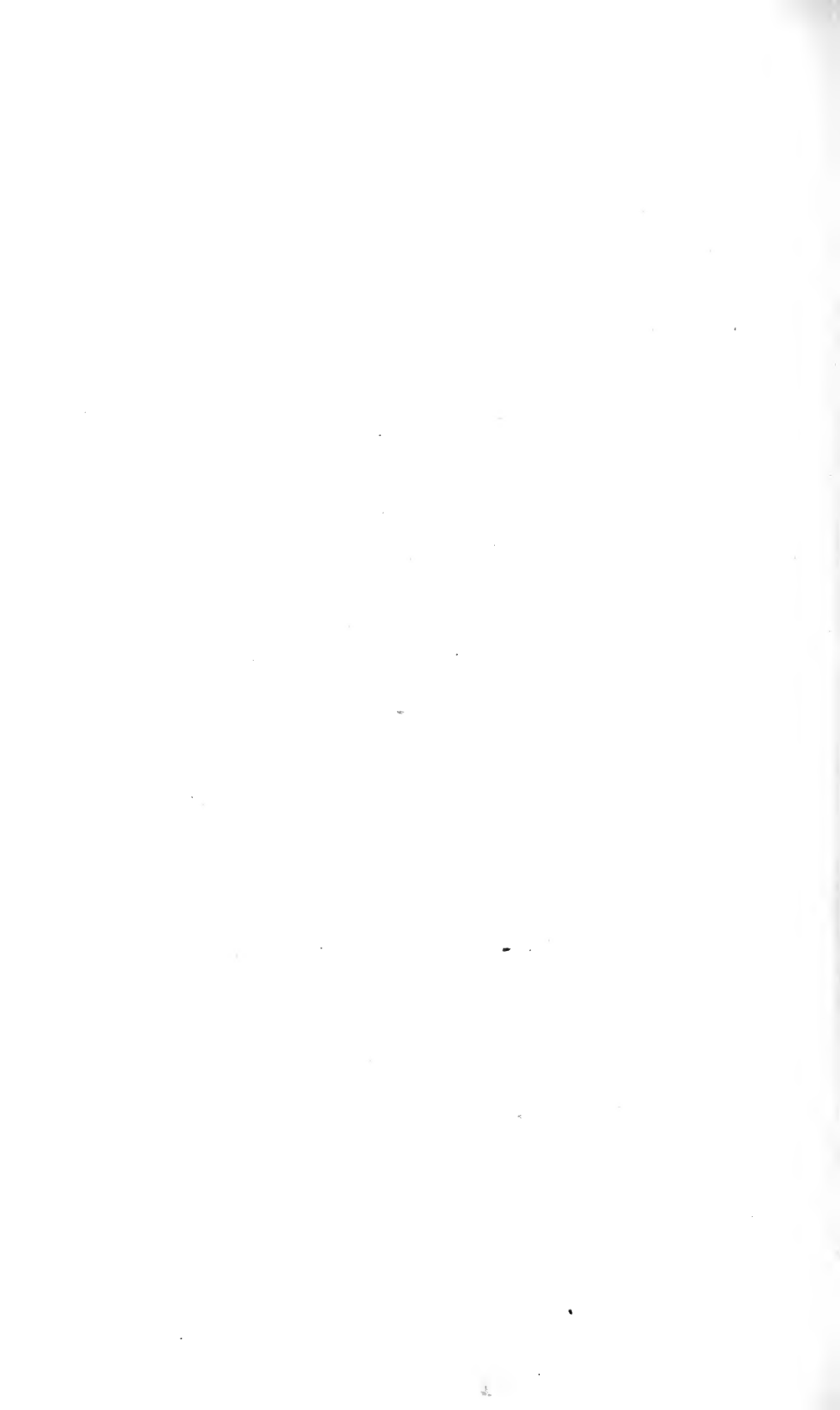
Linacanthis, Des Murs. 1853, fide G. R. Gray.

Char. gen.—Rostrum parvum, breve, rectum, plus minus compressum et acutum, basi plumulis rigidis, recumbentibus, nares rotundas occultantibus tectum. Alæ longissimæ, remigibus primis tribus fere inter se æqualibus. Cauda elongata, valde forficata, rectricibus latis, rotundatis. Pedes breves, debiles, digito medio sine ungue tarso multo brevior, digitis lateralibus fere inter se æqualibus, halluce ungue brevior. Ungues elongati, compressi, incurvati, acutissimi.

Mas et fem. omni temp. pileo rubro induti; mas nupt. temp. pectore uropygioque roseo vel carmesino tinctis.

The genus which occupies our attention at present is one of the most distinct and easily recognizable of the *Fringillidæ*. Its essential characters lie in the small, more or less compressed and acute bill, covered at the base with recurved plumuli, so long and dense as to completely hide the nostrils; in the long wings; in the rather long deeply forked tail; and in the weak feet with their very short toes. The pattern of coloration also seems, in this instance, to be a generic character, being precisely the same in all the known species of

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the genus, and not existing in any other, though there is seen an approach to it in *Cannabina*.

In the type of the genus the bill is exceedingly acute and much compressed, the lateral outlines even concave. From this character of bill, there is seen through *A. Holbölli* and *fuscescens*, a gradual transition to the *A. rostratus*, where the bill is much larger, less compressed and acute, and more full and turgid. The plumuli are also considerably shorter and more scant; and the whole appearance of the bill much that of a *Cannabina* or even of a *Carpodacus*. The wings are very constant throughout the genus, differing scarcely appreciably in length or pointedness in the different species, though the proportions of the primaries vary considerably in the same species. Exactly the reverse, however, is the case with regard to the feet; i. e. the characters differ considerably in the different species, but always are quite constant in each. Thus in *linarius*, *rufescens*, *Holbölli*, *fuscescens* and *rostratus* the proportions of tarsus and toes are much the same, the difference in absolute length being only proportional to the size of the birds. In *exilipes* the feet are smaller and weaker, and the toes shorter, the difference being specially noticeable in the middle toe, which, with the claw, is shorter than the tarsus. In *canescens*, on the other hand, the feet are larger and stronger, even more so than is proportional to the greater size of the bird; but the toes are excessively short, so much so that even the unusually long claw does not make the middle toe equal to the tarsus. The tail differs but slightly, if at all, in the different species; for though *A. canescens* is spoken of by authors as having a comparatively longer tail than has *linarius*, the difference seems hardly more than is proportional to the greater size of the bird.

With respect to color, the species present a remarkable similarity, not only in the pattern of coloration, but also in the tints. In all, there is found the crimson pileum, which varies in size, and in the intensity of the color, with sex and age. It has sometimes a peculiar coppery or brazen reflection, very different from the usual deep crimson tint. The breast, with the sides of the head and body to some distance, as well as the rump, are tinged with rosy or carmine. In the examination of a great number of specimens I have noticed a fact that I have seen nowhere stated. It is that the depth and intensity of the color on the breast and rump is in direct proportion to the lightness or darkness of the general colors of the bird. Thus, in *rostratus* and *fuscescens*, the rosy on the breast becomes so bright as nearly to equal in intensity the crimson of the crown. *Canescens* and *exilipes* present the other extreme, the rosy of the breast being very light, scarcely more intense than that on the rump. *Linarius*, and *rufescens* and *Holbölli* are intermediate between the two extremes in this respect. The females of every age, and the very young males, either want entirely this rosy on the breast and rump, or else show but very slight traces of it. All the species are streaked above; the feathers having very dark centres and light borders; but in *fuscescens* and *rostratus* these borders are so narrow that the parts appear almost uniformly dusky. In *canescens* and *exilipes* these streaks disappear on the rump, leaving that part pure white; in the other species of the genus the rump is thickly streaked. In all, the sides of the body are more or less streaked with dusky; and here the same rule holds good as with regard to the rosy of the breast. In the darkest colored species—*A. fuscescens* and *rostratus*—the streaks are most numerous, darkest, and most distinctly defined; they become less numerous and distinct in *linarius* and *exilipes*, and are sometimes almost wanting in *canescens*. In the females these streaks extend quite across the breast.

It will thus be seen that the species of the genus are all very closely related; the characters, when taken from the colors, being chiefly those of intensity, and when based upon form, being found in the varying combination of several features. *A. rostratus*, indeed, differs from the others in the possession of a much larger and more turgid bill; but as the other characters agree strictly with the type, and especially as the transition from one extreme to the other, 1861.]

through *fuscescens* and *Holböllii*, is gradual, we see not the slightest cause for separating it, even sub-generically. Moreover, if distinctions were founded upon size of bill, there is no reason why a similar discrepancy in the size and proportions of the feet should not be made the grounds of division, and thus it would be necessary to separate the *A. canescens* and *exilipes*;—a procedure hardly warrantable. We think it probable that the genus, as far as can be judged from the species now known to compose it, is incapable of a natural division.

Throughout this genus the most tangible evidence of immaturity, next to the absence of the rosy tints on the breast and rump, lies in the presence of a general yellowish or rufous suffusion, particularly about the head and foreparts of the body. This is accompanied by a general indistinctness of outline of the streaks, the dusky being bordered with reddish, which fades insensibly into the white ground color. Indeed, we are of opinion that this rule is capable of much more extensive application, embracing perhaps the greater part of the genera of the *Fringillidæ* the species of which are streaked. It is very evident in young specimens of *Passerculus savanna*, *Poecetes gramineus*, *Melospiza melodia*, and other allied species, and in some species of *Plectrophanes*, the females of which resemble the streaked sparrows very closely. Moreover, in some species, as for example, the *Spizella socialis* and *Coturniculus passerinus*, the presence of streaks below is an evidence of immaturity, these streaks entirely disappearing when the bird is fully adult.

The "theory of variation," then, in this genus, so far as regards the plumage, would seem to be essentially the same as that which is most usual throughout the family, though agreeing most closely with that exhibited by the *Spizellinæ* (of Baird, as defined by that author). The sexual variations, however, in the absence in the female, of the red which is the most conspicuous color of the male, is precisely the same as is seen in allied *coccothraustine* types, such as *Pinicola*, *Carpodacus*, *Curvirostra*, etc.

Geographical Distribution.—The genus is entirely confined to the Northern hemisphere, being unknown in Africa or South America. It is, moreover, emphatically a boreal genus, all the species inhabiting high latitudes, and only coming south during the winter. The species, as far as now known, are very equally distributed. One is common to Europe and America; two are peculiar to America; two to Europe; and two inhabit the neutral ground of Greenland. Both the latter, however, are probably found at times in Europe, and may also very possibly be detected on our own continent.

Comparison with allied Genera.—The genus is most closely allied to *Cannabina*, a European form, with *Fringilla cannabina* Linn., as type, both having much the same general form and appearance. The differences, however, are readily appreciable, and quite sufficient to separate the two. In *Linota* the bill is much larger, stouter and more turgid, and less compressed and acute, and the nasal plumuli are very much shorter. The feet are larger and stronger, the toes especially much longer, the middle one, without the claw, being nearly as long as the tarsus. The hind toe is as long as its claw. The tail is shorter, less forked, its feathers much narrower and more acute. The wings are much the same. The general pattern of coloration is the same; but the colors of the back are in well defined areas; the throat is streaked; the tail and wings with very broad well defined white edges, etc. Apparently the most essential distinctive characters are those lying in the feet. *Leucosticte* is the most closely allied North American genus, agreeing with *Egiothus* in many respects. It differs, however, in a stouter, more turgid, less compressed and acute bill, with its decidedly convex culmen; in the presence of ridges on the lower mandible. The tail is much less forked, and the feathers are even broader, with more obtuse tips. The feet are much the same; but the lateral toes, in comparison with the middle, are shorter. The claws are shorter. *Chrysomitris*, with *Fringilla spinus* L., as type, has even a more compressed, attenuated and acute bill, but the culmen is much curved; the nasal plumuli are exceedingly short; the

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tail is very much shorter, with narrower and more acute feathers; and the toes, especially the hinder one, are longer. The differences from the other more or less closely allied genera,—*Carpodacus*, *Curvirostra*, *Carduelis*, etc.,—are too great to require special comparison.

The following brief schedule will serve to determine the species:—

Synopsis of Species.

A. Middle toe and claw equal to the tarsus. Rump streaked with dusky at all ages and seasons.

I. Bill dusky; dusky predominating above; sides very distinctly streaked; wings and tail very narrowly edged with whitish; breast in adult deep carmine.

1. Bill enormously large, arched, the culmen convex. Length, 6.00; wing, 3.25; tail, 2.70; bill, 0.41; tarsus, 0.68; middle toe alone, 0.41.....*rostratus*.

2. Similar; smaller; bill less arched; culmen straight. Length, 5.25; wing, 2.90; tail, 2.35; bill, 0.35; tarsus, 0.58; middle toe, 0.36.....*fuscescens*.

II. Bill mostly yellow. Yellowish predominating above; sides confluent streaked; wings and tail broadly margined with whitish; breast in adult bright rosy.

3. Bill bright yellow, elongated, robust; plumuli short; lores and a large gular spot black. Length, 5½ inches (Bp.) *Holb.*

4. Smaller; bill exceedingly acute, yellow, culmen and gonyes black. Rump white, streaked with dusky. Tail, 2.65 inches.....*linarius*.

5. Similar, but smaller; tail scarcely 2 inches; rump tinged with reddish.....*rufescens*.

B. Middle toe and claw shorter than the tarsus. Rump never streaked in adult males.

III. General colors light. Breast light rosy.

6. Size of *linarius*. Feet short and weak. Tarsus 0.55; middle toe 0.28.....*exilipes*.

7. Much larger. Feet long and strong. Tarsus 0.65; middle toe 0.30.....*canescens*.

The following table will exhibit the comparative measurements of the species, and, to some extent, the amount of variation to which they are subject:—

Comparative Measurements of Species.

Name	Sex.	Length	Extent.	Wing.	Tail.	Bill.	Tarsus.	Middle Toe.	Its claw.
<i>A. rostratus</i>	♂	6.00*	.....	3.25	2.70	0.41	0.68	0.41	0.24
do.	♀	5.50*	.....	3.05	2.55	0.40	0.60	0.38	0.20
do.	♂	5.70*	.....	3.05	2.45	0.41	0.66	0.40	0.26
<i>A. fuscescens</i>	♂	5.25	8.80	2.85	2.35	0.35	0.58	0.36	0.19
do.	♀	5.20	8.60	2.80	2.35	0.32	0.58	0.36	0.19
do.	♂	5.30	9.00	2.90	2.35	0.34	0.59	0.37	0.22
<i>A. rufescens</i> †.....	♂	4.50	.....	2.55	2.00	0.29	0.44	0.29	.....
<i>A. linarius</i>	♂	5.50	9.00	3.08	2.65	0.34	0.56	0.35	0.22
do.	♀	5.40	8.90	2.95	2.55	0.34	0.58	0.35	0.23
do.	♂	5.20	8.50	2.80	2.20	0.32	0.57	0.34	0.23
do. (Eur.sp).....	♂	2.95	2.35	0.33	0.60	0.37	0.24
<i>A. Holböllii</i> †.....	♂	5.25	.....	2.83	2.25	0.37	0.54	0.33	0.20
<i>A. exilipes</i>	♂	9.00	3.00	2.55	0.30	0.55	0.28	0.25
do.	♀	2.85	2.50	0.30	0.54	0.29	0.20
do.	♂	3.08	2.55	0.34	0.58	0.30	0.25
<i>A. canescens</i>	♂	6.00*	.....	3.25	2.75	0.33	0.65	0.28	0.28
do.	♀	6.00*	.....	3.30	2.82	0.34	0.65	0.30	0.28

* Of skin. † Measurements taken from Bp. and Schl.

Discussion of Synonyms.—As will be seen by the list given at the head of this article, the genus has quite a number of partial and entire synonyms. This has been caused partly by the fact that there are several forms more or less intimately related, to which the present has been referred; and partly by the fact that the two names which have been in most general use for this group,—*Linaria* and *Acanthis*,—were both first used in a different connection; the former designating a genus of plants, the latter a genus of birds distinct from the present. Fortunately, however, it is not difficult to refer all the synonyms to their proper types, and determine the name to be employed. We take them up in order.

The type of the genus is presented by Linnæus as a *Fringilla*, and subsequently referred by Pallus to *Passer*. The bird is also given by Koch as *Spinus linaria*, being considered by that author as belonging to the same genus as the *Carduelis elegans* (!) (*Fringilla carduelis* of Linnæus), which is the type of *Spinus*. These three names, therefore, become partial synonyms.

Linaria is first used for this genus by Cuvier, in 1817. Bechstein, however, in 1802, applies this name to the *Fringilla cannabina* Linn., and if the name is to be retained for any genus of birds, it must be for that one of which the *F. cannabina* is the type. But Bechstein's name is itself superseded by *Linaria* of Tournefort, of 1717, which is the designation of a genus of plants; since, according to the rules of nomenclature, the name cannot be again employed in any other connexion.

Linota of Bonaparte, of 1838, has as its type *Fring. cannabina* Linn.; but becomes a partial synonym of the present genus because that author included in it the *Fring. linaria* Linn., at that time considering the two forms as only sub-generically distinct. *Linota*, however, in any event, would have to yield to *Cannabina* of Brehm, of 1828, which is based upon the same type (*Fring. cannabina* Linn.), and has priority.

"*Acanthis*, Keys. et Bl." (1840), is used by Bonaparte in his *Conspectus* for this genus. The type of *Acanthis* of Keyserling and Blasius is, however, the *Fringilla spinus* Linn., a form generically distinct from the one now under consideration, and the name consequently cannot be used in this connection. But even if it were based upon the *Fringilla linaria* Linn., it would be superseded by *Acanthis* of Meyer (1822), and of Bechstein (1802), both of which are founded upon a different type (*Fringilla carduelis* Linn.), and have priority in point of date.

Thus it happened, somewhat singularly, that up to the year 1851, this very marked and well known genus had received no tenable distinctive name. At that date *Ægiothus* was proposed by Cabanis, and is now in general use.

We quote *Linacanthus* Des Murs, 1853, upon the authority of G. R. Gray, not having an opportunity of verifying it. The identification of the names of Bechstein and Koch in the preceding paragraphs, are upon the authority of Cabanis.

ÆGIOTHUS ROSTRATUS COUES. Nov. sp.

Diag.—*A. Ægiotho fuscuscenti* coloribus similis, sed multo major (*A. canescenti* staturâ par,) rostro maximo, robustissimo, arcuato, fusco; ventre plerumque fusco-striato.

Mas. nupt. temp. pectore carmesino, uropygio rosaceo.

Fem. et mar juv. colores hæc desunt.

Long. 6.00 poll. ala 3.25, cauda 2.70; rostr. long. 0.41.

tarsus 0.68, dig. med. 0.41, ung. 0.24.

Hab. Groenlandia. Eur. bor. Amer. Sept. bor?

Description. (Male, adult, summer plumage; Jacobshavn, Greenland). The bill is enormously large for this genus, but very slightly compressed, the tip but little acute; the lateral outline is nearly straight; the culmen and gonys are both decidedly convex, and much rounded, having but slight indications of

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the sharp ridge of *linarius*. The commissure is about straight; but the depression of the tip of the upper mandible, which gives the convexity to the culmen, causes it to be a little decurved. The bill is higher than broad at the base, and so vaulted and arched as to resemble that of *Cannabina* or even *Carpodacus* rather than of *Agiothus*. It is mostly of a dusky horn color, but the cutting edges, and a great portion of the lower mandible are light bluish horn color. The nasal plumuli are short, scarcely covering more than the basal third of the bill, and are rather scant. The front, lores and a gular spot are dusky, as in all other species of the genus, the feathers of the former having slightly wavy tips. The pileum is deep crimson. The sides and back of the head and neck, and the upper parts generally to the rump, are blackish brown, scarcely relieved by the dull brownish yellow which margins the feathers so very narrowly as to give an almost uniform dusky aspect to those parts. The rump, though lighter than the rest of the upper parts, is so merely in consequence of the fading of the dull yellowish margins of the feathers into white, it being streaked with dusky almost or quite as thickly as the back itself. The wings and tail are deep dusky brown, very narrowly margined with whitish, most conspicuous on the inner secondaries, but even there much narrower than in any other species except *fuscescens*. The light borders and tips of the median and greater coverts are also reduced to a minimum, being scarcely broader than the margins of the primaries. The under parts are dull white; the sides of the neck, breast and body, and the under tail coverts thickly streaked with well defined lines of deep dusky; the throat, breast, sides of the head and body, and the rump, suffused with rosy, which deepens into carmine on the breast, and is palest on the rump and sides under the wings. The streaks on the sides of the body extend quite across the lower part of the breast; but the middle of the belly and the abdomen are unspotted. The feet are brownish black, large and stout, but are not disproportionate to the size of the bird. They have much the same comparative size and relative proportions of tarsus and toe, as in *linarius* or *fuscescens*. The claws are all short, blunt and little curved, even more so than in *fuscescens*, and differing greatly in this respect from *canescens*, the only species of the genus which equals it in size of body, or in the absolute size of the feet. In the forking of the tail and the proportion of the primaries, it does not differ materially from other species.

Variations by sex, age, &c.—The adult female in summer plumage differs in being notably smaller, though the general proportions, and the shape of the bill are preserved. The crimson pileum is greatly restricted. There is only a barely appreciable tinge of rosy on the breast, and none at all on the rump. The breast is instead thickly streaked, like the sides, with well defined dusty lines and spots.

Immature males, and old males in winter, differ from the adult males in summer, merely in having the rosy or carmine much less vivid and more restricted, the feathers of the breast being tipped with whitish.

Very young birds of both sexes differ, as is usual in this genus, from the adults, in a general rufous or yellowish suffusion, more or less intense, especially about the head and breast; and in a general want of the distinct definition of the dusky streaks, which have reddish borders, and fade insensibly into whitish. The streaks on the under parts appear to be more numerous, the middle of the belly only being free from them. In a specimen before us, the rufous suffusion is more decided than we have ever seen it even in *linarius*, its color being deeper and darker, as we should expect from the much darker colors of the adult birds. Immature specimens have frequently the much restricted pileum of a bright coppery rather than deep crimson tint.

Accidental variations.—With but a small series of specimens—only nine in number—we are unable to present the variations to which the species is subject as fully as might be desired. As far, however, as we can judge from the specimens before us, they are inconsiderable. But even if they were very

great, the species is so marked, and so distinct from any other that there would be no difficulty in recognizing it. The difference in the length of wing of the largest male and smallest female before me is barely three-eighths of an inch. The bill constantly preserves its peculiar size and shape, and in very young birds, still in the downy state, is quite different from that of any other species. The color of the upper parts hardly varies appreciably. The edgings of the wings differ somewhat in breadth, but are never so broad as those of *linarius*. The claws vary considerably in acuteness and amount of curvature; the difference, however, being caused apparently by a greater or less amount of wearing away of the sharp tips.

Comparison with allied species.—The present species, possessing such marked characters, hardly requires comparison with any other except *fuscescens*. As already stated, it is much larger than that species, the difference in the length of the wings being nearly half an inch. The next greatest difference is seen in the bills. That of *A. fuscescens* is larger and every way stouter than that of *linarius*, but the differences between *fuscescens* and *rostratus* in this respect are even greater. As regards color, the two are almost identical, except that in *rostratus* the dusky streaks of the sides usually extend quite across the lower part of the breast.

From *A. linarius* and still more from *A. rufescens*, the differences are sufficiently obvious. It differs in color exactly as does *fuscescens*, and, in addition, in the greatly superior size, and the enormously large bill. *A. Holbölli* has a long and robust bill; but it is bright yellow, not dusky horn color; and the general colors of the bird are those of *linarius*.

In size this species about equals *A. canescens*; but here the resemblance ends. The general very dark, instead of very light colors; the heavily streaked, instead of immaculate sides; the very large and arched, instead of small and conic bill; and the very different proportions of tarsus, toes and claws, with other characters, at once separate the two.

It is unnecessary to institute a comparison with *A. exilipes*, the characters in almost every particular being exactly opposite.

Remarks.—It seemed to us hardly possible that so very distinct a species as the present could, at this late day, have remained undescribed. We accordingly searched with care all the authorities on the subject, which the libraries of the Smithsonian and the Academy contain, but could find no notice of it. Holbölli, Temminck and other authors, who admit the *A. canescens*, have gone considerably into detail with regard to its variations and changes of plumage, which, as well as those of *A. linarius*, are now well known, and a pretty definite "theory of variation" of the genus established. But seasonal or sexual changes of plumage, even the most abnormal, could never produce the marked difference in the size and shape of the bill, and the proportions of the feet and toes. Having therefore been unable to find any description which applies even approximately, we have ventured to impose a name, feeling quite assured, that if we are in error in so doing, some one will before long correct the mistake.

The specimens upon which the species is founded were, with one exception, received from the Copenhagen Museum, to which we are indebted for a fine series of several species, kindly transmitted for examination. They are labeled as having been obtained in Greenland.

ÆGIOTHUS FUSCESCENS COUES.

Ægiothus fuscescens Coues, Notes Ornith. Labrador, in Proc. Acad. Nat. Sci. Phil., Aug. 1866, p. 222.

Diag. *A. Ægiotho linario* paululum minor, rostro fusco magno robusto, plumulis brevibus sparsisque, superioribus partibus fuscis vix luteo striatis, alis caudâque vix albido marginatis, lateribus distinctè nec confluentè fusco-striatis.

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Mas nupt. temp. uropygio rosaceo, pectore carmesino.

Fem. et mas juv. pectore albido fusco-striato.

Long. 5.25 poll.; alar. lat. 9.00; ala .2.90; cauda 2.35; rostr. 0.35; tars. 0.58; dig. med. 0.36; ung. 0.20.

Habitat. Amer. Sept. bor. et orient.

A detailed description of the present species, with the points in which it differs from the *linarius*, has already appeared in the Proceedings of the Academy, as above, and there is consequently no necessity for giving them here. A comparison with the *A. rostratus*, and the differences from that species, will be found under the latter head. The following additional remarks may aid in elucidating the characters of the species.

A small series of specimens from Moose Factory, Hudson's Bay, differ slightly from the Labrador types in a more elongated bill. The bill, however, still preserves the stoutness, and the dusky color of the present species, and the other characters agree strictly with my original specimens.

Several specimens have been received from Forts Resolution and Simpson, collected by Mr. Robert Kennicott, which agree in the most minute particulars with the Labrador types. Indeed, so far as we can judge from a series of twelve specimens from various localities in northern North America, the characters of the species are more constant than in any other of the genus, showing little or no tendency towards those of *linarius*, from which there is not the slightest difficulty in distinguishing it.

The figures given by Audubon in his "*Linaria minor* Ray," come much nearer to the present species than to the *A. linarius*. Moreover, we find in the collection two specimens which were received from Mr. Audubon, and which were quite probably the originals of the plate. The description, however, is undoubtedly that of the true *linarius*.

ÆGIOTHUS RUFESCENS (Vieill.) Cab.

Fringilla linaria, Temminck, Man. Orn. 1835, 267. Nec Linn. Nec Temm. 1820.

Fringilla rufescens, Vieill., Faun. Franç. 83, tab. 41, fig. 1, fide Temm. Id. Dict. Nouv. 1817, xxxi. 342.

Linaria rufescens, Bp. et Schl. Monogr. Lox. 1850, 50, tab. 54.

"*Linaria minor*, Ray, Gould, Birds Eur. 1843, iii. tab. 194," secundum Bp. et Schl.

Linaria flavirostris, septentrionalis, canicularis, Brehm, Vog. Deuts. sec. Bp.

Linaria rubra Gesn.; *L. minima* Br. fide Bp.

Linota linaria Bon. Comp. List, 1838, sec. Bp.

Diag. *A. Ægiotho linario* similis, sed minor, (long. 4.50 poll.) et caudâ brevior, vix bipollicari, uropygio plus minus rufescente, fusco-striato. Long. 4 6-12 poll.; ala 2 6-12 ad 7-12; caud. 2; rostr. 3½-12; tars. 5½-12; dig. med. 3½-12.

Hab. Europ.

The above diagnosis, taken chiefly from Bonaparte, is that of a European species, admitted by most modern ornithologists. Following the usual custom, we present it as distinct, though, it must be confessed, not without some doubts as to the entire propriety of such a procedure. The characters of the species, as given in the diagnosis, certainly show very slight differences from the *linarius*. The distinctive features lie entirely in the smaller size, somewhat shorter tail, and, as the name indicates, a general reddish tinge, especially on the rump. But as is well known to be the case in this genus, the young of all the species have this reddish or yellowish suffusion; and in none is it more marked than in the *linarius*. A specimen of *linarius* from North America now before me, compared with a *rufescens* from Europe, has the rufous tinge everywhere much stronger than in the European bird, especially on the rump. We 1861.]

think that this character is hardly a tangible one by which to separate the two. The length (4.50 inches) and the length of tail ("barely two inches,") assigned to the species might be sufficient to separate, were it not for the fact that specimens of *linarius* are to be found, by comparing large series, which approach large specimens of *rufescens* very closely. In one of these from North America now before us, the tail barely exceeds that of a *rufescens* appreciably. Still, as we have never seen, out of a large series of specimens, any individuals of *linarius* so small as to measure only 4.50 inches in length, and especially as the species is admitted by so many ornithologists, we have concluded to present it as distinct. We do not consider that the fact of the occasional occurrence of specimens of two nearly allied species which cannot be distinguished without difficulty as any proof of the specific identity of the two; and, moreover, the few specimens we have examined may not present, typically, the characters of the species.

Acanthis rufescens is given by Bonaparte and Schlegel, in their very valuable work, the "Monographie des Loxiens," rather as a sub-species, or race of *linarius*, than as entitled to full specific rank. Bonaparte, however, in his *Conspectus*, considers its characters as of full specific value. The two authors first mentioned speak of it as follows: "Elle offre quelquefois des teintes, plus vives que le sizerin commun; mais il paraît encore exister, entre ces deux oiseaux, par rapport à la taille, un passage graduel, absolument comme celui qui nous avons signalé entre le sizerin commun et celui d'Holböll." "Nous avons vu que le sizerin d'Holböll se distingue du sizerin commun par une taille plus fort; la *race*"—the italics are ours—"dont nous nous occupons maintenant s'en éloigne en sens contraire, c'est à dire par une taille plus petite."

It should be borne in mind that Temminck, whose authority in matters of this sort is deservedly high, takes every opportunity of strenuously denying the existence of the *A. rufescens*. He accounts for the discrepancies in size in the following manner: "Il existe, dans cette espèce"—*A. linarius*—"comme chez la *Fringilla cannabina*, *Fringilla phyrhula*, *Alauda cristata*, *Perdix cinerea*, et chez plusieurs espèces d'oiseaux de marais, des individus, souvent des compagnies entières, dont les dimensions sont moins fortes; nous avons observés que ces variétés plus ou moins constantes dépendent de causes purement accidentelles et locales. Il me paraît qu'il est ainsi du *Sizerin* et du prétendu *Cabaret*, qu'on veut faire passer comme deux espèces distinctes."

The *Fringilla linaria* of Temminck, of 1820, is the true *linaria*: but Temminck's *linaria* of 1835 is as certainly the present species, race, or variety, whichever it is to be considered. That author, in his brief diagnosis, dwells especially upon the small size, and the brownish rump; and alters the dimensions from five inches (which is more nearly correct for the true *linaria*), to "quatre pouces cinq ou six lignes," which can only refer to the present species. This identification of his *linarius* of 1835 is moreover rendered necessary by the synonyms adduced.

ÆGIOTHUS LINARIUS (Linn.) Cab.

Fringilla linaria, Linn. Syst. Nat. i. 1766, 322; auctorumque antiq. plerique.

Temm. Man. Orn. 1820, 373; nec Temm. 1835.

Fringilla (Acanthis) linaria, Keys. et Blas., Wirb. Eur. 1840, 161; num. 115.

Passer linaria, Pallas, Zoog. Rosso-As. 1811, ii. 25.

Spinus linarius, Koch, Syst. baier. Zool. 233; fide Cab.

Linota linaria, Holb. F. Grœnl. 1346, 29.

Acanthis linaria, Bp., Consp. Av. 1850, i. 541. Bp. et Schleg. Monogr. Lox. 48, tab. 52.

Ægiothus linarius, Cab., Mus. Hein. 1851, 161. Bd. Gen. Rep. 1858, 428.

Linaria minor, Ray, Sw. et Rich. F. B. A. 1831, ii. 267.

Fringilla borealis, Vieill., Nouv. Dict. xxxi. 341; nec Temm. quae *Linaria canescens*, Gould.

Linota borealis, Bp., Ind. Eur. Av. 48.

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Diag.—A. rostro tenue, acutissimo, compresso, flavo, plumulis hand densis ad medium porrectis, superioribus partibus luteis fusco-striatis, lateribus uropygioque semper fusco-striatis, pedibus mediocribus, digito medio cum ungue tarso aequale.

Mas nupt. temp. jugulo, pectore, lateribus, uropygioque roseo tinctis.

Fem. et mas juv. pectore uropygioque albidis, fusco-striatis.

Long. 5.50 poll. ; alar. lat. 9.00 ; ala. 3.00 ; cauda 2.50 ; rostr. 0.34 ; tarsus 0.56 ; dig. med. 0.35 ; ung. 0.22.

Hab. Amer. Sept., præcip. bor. ; Europ. Asia.

Description. (Adult male, in breeding plumage).—The bill is small, slender, exceedingly acute, much compressed, higher than broad at the base, the lateral line very concave ; the culmen and gonys are about straight ; the commissure appears straight to the angle, but the cutting edge of the lower mandible has a considerable lobe towards the base, which being incurved, is concealed by the overlapping edges of the upper mandible in the closed bill. The bill is bright yellow, except the culmen and gonys, which are dusky. The nasal plumuli, though not very dense, are considerably lengthened, extending over half the bill. The front, lores and a rather small gular spot are blackish ; but the feathers of the first have whitish tips, which give it a hoary appearance. There is a superciliary streak somewhat lighter than the adjacent parts, but it is illy defined. The entire crown is deep crimson, as in full plumaged birds of all the species of the genus. The sides and back of the head and neck, the upper parts generally to the rump, the scapulars and lesser wing coverts, are variegated with blackish brown and dingy yellowish ; each feather having its central portion of the former color, its edges and tip of the latter. On the rump the yellowish mostly disappears, that part being streaked with dusky and pure white. The wings and tail are brownish black or deep dusky ; the latter all round, the former only on the outer vanes edged with whitish. The edging is very narrow on the primaries, but on the inner secondaries and tertiaries becomes broad and conspicuous. The median and greater coverts are narrowly edged and broadly tipped with white, with a tinge of yellowish, forming two transverse bars on the wings. The throat, breast, sides to some distance, with the rump, are tinged with carmine, deepest on the breast, faintest on the rump. This color, though brighter than in *canescens*, or *exilipes*, never becomes as deep a crimson as is seen in *fuscescens*, having always more of a rosy tint. It extends along the throat, not however encroaching on the sides of the neck, quite to the dark gular spot, which it does not invade, but extends on the sides of the head almost to the eyes. Along the sides of the body it reaches quite to the tibiæ, further than on the middle of the belly. There are no dusky streaks across the breast ; but these extend along the sides. They are pretty numerous, much more so than in *exilipes*, and quite dark ; but they are illy defined, and more or less confluent, lacking the sharpness of outline of *fuscescens*. The under tail coverts have dusky shaft lines. The feet are deep brownish black, moderately long and stout ; the middle toe with its claw about equal to the tarsus. The claws are moderately long, curved and acute, and black.

Variations by sex, age, &c.—The old males in winter plumage differ from those in summer merely in having the crimson of the crown less intense ; the rosy of the breast and rump lighter and more restricted, the feathers of the breast being tipped with whitish for a greater or less extent ; and in a rather more notable amount of yellowish, especially observable on the rump and sides of the breast.

The adult females either want entirely, or have but very slight traces of the rosy of the male on the breast and rump. The latter is generally, except in wanting the rosy tint, much as in the male ; but the breast has instead a light dingy yellowish wash, and is streaked quite across with dusky. The female is, moreover, usually smaller than the male.

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Immature birds of both sexes hardly differ from each other, except that the young males soon show slight traces of the rosy, which the young females entirely want. The young of both sexes may, however, be readily recognized by the presence of a general yellowish or buffy suffusion, especially about the head and neck, more or less conspicuous. This is sometimes so marked in character as to cause the bird to be streaked above with dusky and *reddish brown*, and to have the sides of the head and neck, the breast and the sides of the body yellowish brown. The lateral streaks are more indistinctly defined, having borders of the prevailing reddish, which fades insensibly into white. The white edgings of the wings and tail partake of the general buff tinge. At this age also the crimson of the crown is restricted to scarcely more than a frontal patch, and has often a coppery or brazen rather than a deep crimson color.

Accidental variations.—Although this species is common with others of the genus, varies somewhat in size and proportions, in addition to the sexual and seasonal changes to which it is subject, the variations are within narrow limits, and the species readily recognizable through all of them. In a very large series (over fifty in number) from Europe and various localities in North America, the greatest difference in length is hardly over one-third of an inch. The difference in length of wing is about .25 of an inch. The feet do not differ appreciably in length or stoutness, though the claws vary somewhat in length and amount of curvature. The bill is usually very constant, preserving its attenuation and acuteness. Its color, however, differs; sometimes the upper mandible, more rarely the greater part of the lower, are dusky; and on the other hand, the usual gamboge yellow is so bright as to become chrome. The proportions of the quills vary considerably. Usually the second is longest, the first and third equal and nearly equalling the second; the fourth a little, and the fifth considerably shorter. Sometimes the first three are about equal; sometimes the first is absolutely longest: and, again, the fourth is so long, or the first so short, as to cause them to become equal. The variations in plumage, other than those of sex and age, already adverted to, are unimportant. The rump is, in all ages and seasons, conspicuously streaked.

Comparison with allied species.—The present species having been taken at the standard of comparison, the differences between it and other species will be found detailed under their respective headings.

In a critical and extended examination and comparison of an extensive series of specimens from both continents, I have been unable to detect any characters by which to separate the American and European birds. They appear to be absolutely identical.

Discussion of synonymy.—Although this species has a large number of synonyms, these arise chiefly from the numerous genera to which it has been referred. The only points which need discussion here are the following:

The *Fringilla borealis* Vieill. (not of Temminck,) is certainly the present species, although Temminck places it as a synonym of his *F. borealis*, which is *Linaria canescens* Gould. No description accompanies the *Linota borealis* of Bonaparte's "Index Europeanum Avium." That author quotes *Fringilla linaria* Ray, and *Fring. borealis* Vieill., which would cause his *Linota borealis* to become a synonym of the present species; but, if so, he is in error in adding *Linaria canescens* Gould. It is most probable, however, that he was at that time indisposed to admit the latter as a distinct species. The identification of his *Linota borealis* with the present species is, moreover, rendered necessary by the synonyms adduced to his *Linota linaria*, (*Linaria rubra* Gesn., and *L. rufescens* Vieill.) causing the latter to refer to the smaller species, as a synonym of which Bonaparte himself, in his *Conspectus*, considers it.

The *Linaria minor* Ray, of Swainson's Fauna Boreali-Americana, is the true *A. linarius* of North America. *L. minor* Ray, of Gould's Birds of Europe, is considered by Bonaparte and Schlegel as referring to the *A. rufescens*. With-

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out the original description of Ray before us, we are unable to say to which of the two species his *L. minor* refers.

ÆGIOTHUS HOLBOELLI (Brehm) Cab.

Linaria borealis, Schleg. fide Bp.; nec Vieill.; nec Temm. 1820, nec Temm. 1835, nec Aud., nec *Linota bor.* Bp.

Linaria Holboelli, Brehm., Vög. Deutschl. 280.

Acanthis Holbölli, Bp. et Schleg. Monogr. Lox. 1850, 50, pl. 53.—Bp. Consp. Av. 1850, 541.

Diag.—*A. Ægiotho linario* major, rostro flavissimo, maximo, robustissimo, elongato, basi tantum plumulis, tecto; macula gulæ extensa lorisque nigris; vertice rubro; pectore uropygionque rosaceis.

Long. 5 3-12 poll; Ala. 2 10-12 ad 2 11-12; cauda 2 2-12, rostr. long. $4\frac{1}{2}$ -12 ad $4\frac{3}{4}$ -12, alt. 3-12, lat. $2\frac{1}{4}$ -12; tarsus $6\frac{1}{2}$ -12; dig. med. 4-12, ung. $2\frac{1}{2}$ -12; hallux $2\frac{1}{2}$ -12, ung. $3\frac{1}{2}$ -12.

Hab. Eur. bor. et occid.

The preceding diagnosis is of a species, which, like the *A. rufescens*, is so closely allied to the *A. linarius* as to render it a matter of some doubt whether it be anything more than a variety or race of that species. Its characters lie in the somewhat larger size, and the very large bright yellow bill with its short plumuli. Never having had an opportunity of examining a specimen of this species, there being none in the Museum of the Smithsonian Institute, or of the Philadelphia Academy, we can express no opinion with regard to its relationships to the *A. linaria*. It is, we believe, admitted as a distinct species by most later ornithologists, though Bonaparte and Schlegel, in their Monograph of the *Loxiinæ*, place it in the same category as the *A. rufescens*. Having nothing to offer respecting it, we take the liberty of transcribing the remarks made by the authors just mentioned:

"Cette race du Sizerin ressemble sous tous les rapports à l'espèce précédente," —*A. linarius*—"mais elle est d'une taille plus forte, et son bec est plus long et plus robuste. Elle est beaucoup plus rare que le Sizerin commun et la petite race appelée Cabaret ou *Ac. rufescens*. Nous avons examiné un nombre assez considerable d'individus pris en Saxe et en Belgique. On trouve quelquefois des individus intermédiaires entre cette race et le Sizerin, de sorte qu'il existe entre ces oiseaux, un passage semblable à celui qui a lieu entre les Bec-croisés grand et ordinaire."

Temminck places this species ("Holböll's Leinfink" of Brehm) as a synonym of his *Fringilla borealis*. This, however, is an error, his *F. borealis* being the *Linaria canescens* of Gould.

We quote *Linaria borealis* Schleg. on the authority of Bonaparte's Conspectus. It is, so far as we can learn, the only instance of the application of the name *borealis* to this species. A discussion of *Linota borealis* Bp. will be found under *A. linarius*.

ÆGIOTHUS EXILIPES Coues. Nov. sp.

Fringilla borealis, Aud. Orn. Biog. v. 1837, 87; pl. 400; nec Vieill.

Linaria borealis, "Temm." Aud. B. Am. 1841, iii. 120; pl. 128, nec Temm.

Ægiothus canescens, Ross, Edin. Phil. Journ. Jan. 1861, 163. *Minime Auctorum.*

Diag.—*A. Ægiotho linario* similis, ejusdemque staturæ; rostro plerumque parvo, (sed variante) acuto, conico, magna ex parte fusco; plumulis densissimis, sed brevibus; fronte canescente, loris gulæque macula, atris; uropygio candido, immaculato, lateribus striis paucis confluentibus fuscis; pedibus parvis exilibusque, digitis brevibus; medio cum ungue tarso brevior.

Max nupt. temp. pectore uropygionque rosaceis.

Fem. et mar. juv. hic color deest.

Long. 5.50 poll.; alar. ext. 9.00; ala, 3.00; cauda, 2.50; tarsus, 0.70; digit. 0.28; ung. 0.22.

Hab. America Sep. bor.

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Description.—[No. 19,686, adult male, Fort Simpson, 30 Apr. 1860.] The bill is small, short, stout, thick at the base, regularly conical, somewhat compressed, but not so much so as in *A. linarius*, dusky throughout, except the cutting edges. The tip of the upper mandible slightly overhangs that of the lower. The culmen, gonys, and commissure from the angle are all about straight. The nasal plumuli are exceedingly full, dense and heavy, reaching about half way to the top of the bill. They are very much heavier than in *linarius*, and though absolutely shorter than in that species, they are comparatively as long, owing to the smaller size of the bill. The front is dusky like the lores, and more broadly so than *linarius*, but the feathers are tipped with whitish, which gives the forehead a hoary appearance. There is an appreciable light superciliary streak, more distinct than in *linarius*. The lores, and a gular spot are dusky. The crown is deep crimson, exactly as in *linarius*. The general color of the upper part is that of *linarius*; but the dusky streaks are smaller, more numerous and indistinct, especially on the anterior portions of the back; the yellowish is much lighter than in *linarius*, approaching to white. Towards the rump the yellowish tint disappears before the streaks do, leaving a space streaked with dusky and pure white. The rump is pure white, immaculate, with a delicate light rosy tinge. The upper tail coverts have slightly dusky centres. The wings and tail are much as in *linarius*. The primaries are very narrowly edged and tipped with white, the edging becoming quite broad on the inner secondaries. The median and greater coverts are narrowly edged, and broadly tipped with white, forming two transverse bars. The second primary is longest; the first and third equal and scarcely shorter; the fourth a little less, the fifth very much shorter. The under parts are white the throat, breast and belly with a light tinge of rosy, many shades lighter than in specimens of *linarius* of the same age and season. The sides are streaked with dusky; but the streaks are very sparse, and illy-defined, much more so than in *linarius*. The under tail-coverts are almost immaculate. The feet are brownish black, as are also the claws; the feet are much smaller, and weaker than in *linarius*, the difference being especially noticeable in the length of the toes. The middle toe without the claw is shorter than that of *linarius* by about the length of the last joint of the latter species.

Variations by age, sex, &c.—As is usual throughout this genus, evidences of immaturity are to be found in the faintness, or entire absence of the rosy tint of the breast and rump, these parts being lightly streaked with dusky; in the restriction of the crimson of the crown to a frontal patch, and in a general light yellowish or buffy suffusion about the head and fore-breast. The suffusion, however, does not appear to be as deep as that of *linarius*, and some other species. The females are hardly distinguishable from the young males; but the crimson of the crown has usually an orange reflection, and the breast and rump are more thickly streaked. The size appears rather less.

Accidental Variations.—The variations to which this species is subject, other than those of sex and age, are very great, much more so than exist in any other species of the genus. The dimensions of the whole bird; the size, shape and color of the bill; the color and number of the streaks above and on the sides; the extent and purity of the white of the rump, &c., are all liable to great variations. Indeed, almost the only character that is perfectly constant lies in the feet, in their absolute size, and the relative length of the tarsus and toes. With this variation, however, the specimens all have a general resemblance to each other, which, together with the character of the feet, render it easy to distinguish them from any other species of the genus. The precise combination of characters varies with almost every specimen; and there are, moreover, intermediates to be found between all extremes; entirely removing the doubt which might otherwise arise, as to whether there were not two or more species combined in the series of specimens.

In an extensive series, comprising thirty-seven specimens, I have found the

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variations to be as follows. The difference in total length of body is rather more than .50 of an inch. The average size is rather less than 5.50 inches. The difference in length of wing from the carpal joint is somewhat over .25 of an inch. In length of tail the differences are about the same. The feet are constant, both absolutely and relatively, the variations being scarcely appreciable. The claws, however, vary quite notably in length and amount of curvature. To express the difference in the feet of this species and the *A. linarius*, relatively without measurement, we have said that in the former the tarsus exceeds the middle toe and claw, and that in the latter the toes are equal; but this variation in the size of the claws may cause the fact not to hold good in all cases. The bills vary quite notably in size and color, they being sometimes nearly as bright yellow as in *linarius*; but they are usually almost entirely dusky, and they are never so acutely pointed and so much compressed as in that species, preserving their regular conical shape without much variation. The plumuli vary in color, from dingy whitish to dusky, but are usually of the former color, and are always heavy and full. The upper parts are usually as given in the description; lighter than in *linarius*, the conspicuous yellowish or buff of that species fading into whitish more or less pure. Sometimes, however, the upper parts are quite like *linarius*; in other specimens the dusky centres of the feathers become so broad and conspicuous as to give the prevailing color of the upper parts, causing the specimens to approach *A. fuscescens* in this respect only. In these cases, however, the light edges of the feathers, though so narrow, are nearly pure white, and the rump is very broadly pure white, entirely without streaks, forming a marked contrast. The edgings of the wings and tail do not vary notably, being always nearly identical with those of *linarius*, but perhaps a little purer. The rump in adult birds is pure white, with a rosy tinge, without spots or streaks; but in immature specimens it is frequently marked with dusky, though never so thickly as in *linarius*. The dusky streaks on the sides are usually very sparse, and though varying in number and intensity, never become so thick and dark as in *linarius*. These streaks in immature and female birds frequently extend as slight touches quite across the breast. In adult males the breast is immaculate, with a light rosy tint. In the fullest plumaged males the rosy is always several shades lighter than in the males of *linarius* of the same age.

Comparison with allied species.—*A. linarius* being most closely related, in the foregoing descriptions the comparisons have been made with that species. The points of difference may be summed up as follows: The smaller, more conic, less compressed, darker colored bill, with its very heavy and dense nasal plumuli; the different character of the streaks above; the white immaculate rump; the paucity of the streaks on the sides; the much lighter rosy tinge of the breast and abdomen; the smaller, every way weaker feet, with their much shorter toes.

Some specimens—the largest and lightest colored—resemble *A. canescens* in general appearance, having the same conic bill, heavy plumuli, white rumps, sparsely streaked sides, &c. They may, however, be readily distinguished by the great discrepancy in the size of the feet and claws, those parts in *canescens* being as much larger and stronger in *linarius* as they are smaller and weaker than in that species in *exilipes*.

The species requires no comparison with *A. fuscescens*, still less so with *A. rostratus*, the differences from both of those species being sufficiently obvious.

The very large, bright yellow bill, with the short plumuli of *A. Holbølli*, at once separates that species. The smaller size, more acute bill, less dense plumuli, general rufous tinge and shorter tail of *A. rufescens* will serve to distinguish it. Both these species, moreover, have the same character of feet as has the *A. linarius*.

Discussion of synonymy.—The only name which we have met with which can be referred to this species, is the *Fringilla*, or *Linaria borealis* Temm., of Aug. 1861.]

dubon. The identification with the present species, rather than with the *borealis* of Temminck, which is the true *Linaria canescens*, Gould, is rendered necessary by the measurements given, especially those of the entire length, and length of tarsus. Moreover, a specimen of *exilipes* now before us agrees so minutely with Audubon's figure and description, that we have not the slightest hesitation in referring the one to the other.

In the Edinburgh Philosophical Review, as above, there is given, by Bernard R. Ross, Esq., a list of a collection of birds made by himself on Mackenzie's River. This is the same collection that was sent to the Smithsonian; and the *Ægiothus canescens* there mentioned refers to the very series of birds upon which we have based our *A. exilipes*. The mistake is, however, very pardonable, as the writer had no specimens of the true *canescens* for comparison; and affords a good example of the caution necessary to be used in identifying specimens from descriptions, especially when so brief as is the diagnosis of *A. canescens* in the General Report.

ÆGIOTHUS CANESCENS, (Gould,) Cab.

Linaria canescens, Gould, Birds Eur., 1843, iii. tab. 193.

Linota canescens, Bon. Comp. List, 1838.

Acanthis canescens, Bon. Consp. Av., 1850, 541. Bp. et Schl. Monogr. Lox., 1850, 47, tab. 51.

Ægiothus canescens, Cab. Mus. Hein., 1851, 161. Baird, Gen. Rep. Birds, 1858, 429.

"*Linaria Hornemannii*, Holb. Kroy. Nat. Tidsk., 1843, iv. 398."

Linota Hornemannii, Holb. Faun. Groen., 1846, 30.

Fringilla borealis, Temm. Man. Orn, 1835, 264, excl. syn. Nec Vieill.; nec *Fring. bor.* vel *Linaria bor.* Aud. quæ *Æg. exilipes* Coues; nec *Linota bor.* Bp. quæ *Fring. linaria* L.

Diag.—*A. Ægiotho linario* major (long. 5.75 poll.), rostro mediocri, conico; plumulis densissimis, superioribus partibus fusco alboque striatis, inferioribus uropygioque albidis immaculatis; cauda elongata, pedibus validissimis, ungibus protractis et incurvatis.

Mas nupt. temp. pectore uropygioque roseo indutis.

Fem. et mas juv. pectore uropygioque albidis, fusco-lineatis.

Long. 6.00 poll.; cauda, 2.75; ala, 3.25; rostrum, 0.34; tarsus, 0.65; dig. med. 0.30; ung. 0.28.

Hab.—Groenlandia. Europ. Amer. Sept.?

Description.—(Adult, Greenland. From Holböll himself.) The bill is moderate, or rather small for the size of the bird, regularly conic, very stout at the base, where it is as high as long; only moderately compressed and acute; the upper mandible is mostly dusky, the lower, dusky only along the gonys, the rest being yellowish. The nasal plumuli are very dense, and reach nearly to the middle of the bill; those between the nostrils are grayish, those on the sides of the bill much darker, of the same color as the brownish black lores and gular spot. The front is brownish black, but the feathers have broad, hoary tips. There is a pretty well defined, light superciliary streak, extending quite to the base of the bill, and including the lateral feathers of the front. The crimson pileum occupies nearly the whole of the crown. The sides of the head, sides and back of the neck and upper parts generally, are streaked with brownish black and white; the feathers have the centre of the former color, and are edged and tipped with the latter. The white is nearly pure, except on the sides of the head and neck, where it has a slight yellowish tinge. The proportions of the primaries do not differ materially from those of other species. The first, second and third are nearly equal and longest; the fourth is a little, and the fifth considerably shorter. The quills are brownish black, edged with white, very narrowly on the primaries, more broadly on the secondaries; the tips of the greater and median coverts are broadly white,

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forming two conspicuous transverse bands across the wings. The tail is brownish black, like the wings, quite broadly edged with white; and is comparatively as well as absolutely longer than in other species. The entire under parts, from the throat, together with the rump, are pure white, entirely without spots or streaks; the breast and rump having a light rosy tinge. The feet are brownish black; remarkably long and strong for this genus, exceeding in this respect those of any other species. The claws are all long, strong, greatly curved and very acute. That of the middle toe nearly or quite equals its digit, and that of the hind toe much exceeds it.

The entire plumage in this species is of a thick, soft, mollipilose character, enabling it to endure the rigors of winter in very high latitudes.

Variations by age, sex, &c.—Immature birds, though preserving the general characteristics and appearance of the adults, differ in several respects. The changes are entirely analogous to those adverted to under *A. exilipes*. The pure white edgings of the feathers of the upper parts and wings become tinged with yellowish, more or less intense, especially about the head and neck, where there is a general buffy suffusion. This yellowish sometimes becomes very bright and conspicuous. The crimson on the crown is restricted to a patch extending scarcely half way to the occiput. The nasal plumuli and the front are more yellowish, and the dusky lores and gular spot more restricted. The bill is yellowish, except along the culmen and gonys. There is little or no indication of the rosy on the breast and rump, which, instead, are sparsely streaked with narrow lines of dusky.

According to Holböll, the summer plumage differs from that of winter, chiefly by the narrower whitish edgings of the feathers. The bill is entirely dusky, except along the cutting edges, and very thick, being as broad as high. The old females, and the young males after the first month, differ from the adult males in winter plumage in the entire absence of the rosy on the breast and rump, and in the less purity of the white beneath, the sides being lightly streaked.

Without a sufficiently extensive series of skins, I am unable to present the variations in size, proportions, &c., to which this species is subject. As, however, neither Temminck nor Holböll, as far as I can discover, make mention of them, it is to be presumed that the species is subject to no very remarkable deviations in these respects.

Comparison with allied species.—This species, in its large size, strong feet and claws, general light colors, white rump, &c., is too distinct to require comparison, except perhaps with *A. exilipes*. The differences will be found detailed under the head of the latter.

Discussion of synonymy.—We have not been able to find where *Linaria canescens* is first characterized; but, as Bonaparte, in 1838, gives a *Linota canescens*, the species must have been introduced at least as early as that date. The date of *Linota Hornemanni* is 1843; and the latter consequently loses the priority claimed for it by Holböll.

The *Fringilla borealis* of Temminck (but not of Vieillot) is undoubtedly the present species. The diagnosis and the very full description are accurate and pertinent, although the dimensions given ("longueur, cinq pouces"), is below the usual standard. But, while the description is thus applicable to the present species, the author evidently either considers his bird as quite a different one, viz., the common *linaria* of Europe and America, or else is in error with regard to the names he quotes as synonyms. For, in giving the synonymy he says: "C'est dans l'une ou l'autre de ces livrées très variables suivant la saison, la *Fringilla linaria* des auteurs tant anciens que modernes, qui ont souvent confondu les deux espèces." He then quotes as synonymous, "La Fringille sizerin," Vieill. (Gal. Ois. 78, pl. 65), and "Le Sizerin boréal," Roux. (Orn. Prov. 165, pls. 101 and 102), both of which refer to the true *Fringilla linaria* of Linnæus. He also, in a note under *F. linaria*, while insisting on the

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specific identity of *A. linarius* and *rufescens*, says, that—"le Sizerin boréal (*Linaria borealis*) de Vieillot forme une espèce distincte"—from *A. rufescens*—"identique de mon Gros-bec boréal de l'article précédent, mais auquel on ne doit pas réunir le Sizerin ou le Cabaret des auteurs, deux dénominations synonymes de mon Gros-bec sizerin ou *Fringilla linaria* des méthodistes;" clearly mis-identifying Vieillot's bird. In discussing Temminck's names of the *Ægiolhi*, it must be borne in mind that he sturdily refuses to admit the specific distinction of *A. linarius* and *rufescens*. He moreover places as a synonym of his *Fringilla borealis*, the "*Holbölls Leinfink*" of Brehm., which later ornithologists, with what propriety I am unable to say, regard as a distinct species.

Borealis of Temminck has priority over both *canescens* Gould, and *Hornemanni* Holb.; but as the name was previously applied by Vieillot to the *A. linarius*, it cannot of course be retained.

This name *borealis* has been applied by four authors to as many different species, for neither of which it can stand. *Borealis* Vieillot, is the *A. linarius* (Linn.) Cab.; *borealis* Schlegel, is the *A. Holbölls* (Brehm) Cab.; *borealis* Temminck, is the *A. canescens* (Gould) Cab.; while *borealis* "Temm." of Audubon is the *A. exilipes* Coues.

Dec. 3d.

Mr. LEA, President, in the Chair.

Twenty-two members present.

The following papers were presented for publication:

A revision of the species of *Baculites* described in Dr. Morton's Synopsis of the Cretaceous Group of the United States, by Wm. M. Gabb.

On *Squalus Americanus* Mitchell, referring it to the genus *Odontaspis* Agassiz, by C. C. Abbott.

Descriptions of the lower Silurian, Jurassic, Cretaceous and Tertiary Fossils collected in Nebraska by the Exploring Expedition under the command of Capt. W. F. Reynolds, U. S. Top. Eng., with some remarks on the rocks from which they were obtained, by F. B. Meek and F. V. Hayden, M. D.

Dec. 10th.

Mr. LEA, President, in the Chair.

Thirty-four members present.

The following papers were presented for publication:

Descriptions of new Paleozoic Fossils from Kentucky and Indiana, by Sidney S. Lyon.

On the Mollusca of Harper's Ferry, Virginia, by George W. Tryon, jr.

Dec. 17th.

Mr. LEA, President, in the Chair.

Twenty-seven members present.

A paper was presented for publication, entitled,

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to the genus *Latrunculus* of Gray, or *Eburna* of others.* The shell structure appears to be more compact than in the typical *Vivipari*, and the species generally are more ponderous. The angulation of the outer lip and the sinus at the base are characteristic, and contrast strongly with the uniform plane of the aperture of *Viviparus*.

The figure of a "deformed" *V. decisa* (36) published by Binney, gives an exaggerated idea of this peculiarity of form.

The soft parts of *Melantho* appear to also differ from those of *Viviparus*, the rostrum being smaller and less protractile, and the auricles behind the tentacles are likewise much smaller.

The earliest known American species of *Melantho* were contemporaneous with the *Vivipari*, three species having been discovered by Dr. Hayden in the lignite beds of Fort Union and described by Meek and Hayden as *Vivipara multilineata* (= *V. nebrascensis* M. and H.), *V. vetusta* and *Melania* or *Lymnaea multi-striata*. These have now been referred to the genus *Melantho* in the manuscript work of Meek and Hayden.

Melantho multilineatus.

" *vetustus*.

" *multistriatus*.

The following are referrible to the same genus,—*Melantho*:

Melantho ponderosa *Ad. ex Say* = *V. ponderosa* *B.*

" *decisa* *Ad. ex Say* = *V. decisa* *B.*

" *coarctata* *Gill ex Lea* = *V. coarctata* *B.*

" *cyclostomatiformis* *Gill ex Lea* = *V. cyclostomatiformis* *B.*

" *incrassata* *Ad. ex Lea* = *V. incrassata* *B.*

" *decapitata* *Gill ex Anth.* = *V. decapitata* *B.*

" *regularis* *Gill ex Lea* = *V. regularis* *B.*

LIOPLAX Troschel.

Lioplax Troschel, *Gebiss der Schnecken*, p. 100, 1857.

Haldemania Tryon, *Proc. Acad. of Nat. Sciences*, 1862, p. 451.

Paludina sp. auct.

Vivipara sp. auct.

Shell imperforate or rimate, turreted, rather thick; of very compact structure; unprovided with colored bands; whorls carinated and longitudinally flattened, with the sides nearly parallel. Aperture little oblique, oblong-oval, broadly rounded at the base, and sinuous or retreating backwards, the sharp outer lip being subangulated near the front; columellar lip concave appressed to the body whorl, forming an obtuse angle with the outer.

Operculum corneous, with a large spiral nucleus, but with the subsequent accretions concentric.

This type is evidently most nearly related to *Melantho*, but differs especially in the spiral nucleus of the operculum, as well as in the form of the aperture. A single species is found, which has been ascertained to inhabit some of the streams of Ohio, Indiana, Kentucky, Pennsylvania and New Jersey. We are indebted for its subgeneric distinction to Prof. Troschel and Mr. Tryon.

Lioplax subcarinata = *Haldemania subcarinata* = *Vivipara subcarinata* *B. ex Say*.

NOTE.—I regret that I have not been able to avail myself more fully of the invaluable "Gebiss der Schnecken" of Dr. Troschel. The four parts were only received at the Smithsonian Institution, through the kindness of Prof. Agassiz,

* The name of *Latrunculus* has been recently applied by Dr. Günther to a genus of Gobioid fishes, but, if no other reasons, cannot be retained on account of preoccupation of the name. The genus had, however, previously received the name of *Aphyia* from Risso.

the day before the reception of the proof of the foregoing paper, and consequently too late to compare my views with those of the distinguished author. I am happy to find that the validity of the groups of Viviparidae, which have been above defined, is confirmed by the researches of Dr. Troschel, who has examined the dentition of several species of true *Viviparus*, besides that of the *Paludina subcarinata* of Say, for which he has proposed the name *Lioplax*. The latter name is now substituted for *Haldemania* of Tryon, and is modified to form the name of a group containing that genus and *Melantho*.

Additional Remarks on the North America *ÆGIOTHI*.

BY ELLIOTT COUES, A. M., M. D.

Since the publication in the Proceedings of the Academy for November, 1861, of my Monograph of the genus, the Smithsonian has been constantly in the receipt of additional specimens from all parts of North America. These were mostly the *A. linarius*; but collections from the North have usually contained a number of well-characterized examples of *A. exilipes*. Nothing, however, of special importance has been elucidated, until the reception of a series collected in winter in the vicinity of Quebec. These specimens, as they throw much light on the variations of the typical species of the genus, *A. linarius*, will merit a brief notice. If the deductions I have drawn from these specimens are warrantable, we have in North America the forms long recognized in Europe as *A. Holbölli* and *A. rufescens*; and these are both rather races than distinct species.

Selecting from the series two or three skins which differ most markedly from the usual style of *linarius*, and comparing them with a typical specimen of the latter from Philadelphia, I find the following differences:

The bird is very decidedly larger. The difference in total length is nearly one inch, as near as I can judge from the dried skins. The wings and tail are each about a fourth of an inch longer. The tarsus and middle toe with its claw are together about two-tenths of an inch longer.* The bill and feet are decidedly larger and stouter, though perhaps not disproportionately so. The former is somewhat elongated; its lateral outlines straight instead of a little concave; its culmen slightly curved. The bill is of a bright chrome-yellow, except just along the culmen and at the extreme tip. The gular spot seems rather large. In other respects, the two birds are quite identical, for, with these differences in size, there is an exactly proportionate increase in the bill, feet, wings and tail; and the colors of the two do not differ appreciably, except in the bill, and perhaps the larger gular spot. The specimens give the idea, in fact, of overgrown individuals of the common *linarius*.

But now, on examining in detail the rest of the series, I find that, from the one extreme, the characters of which have just been given, there is a complete and gradual transition,—a diminution in size, down to specimens which cannot possibly be distinguished from typical *linarius*. There is no break in the series; no dividing point where we can stop calling the specimens "*linarius*" to give them another name; in spite of the discrepancy which is so evident between the two extremes.

The point of interest which attaches to these specimens, is the bearing they may have on the mooted question of the claims of *Ægiotus Holbölli* to full specific rank. As was the case at the time of the preparation of my Monograph, I have never examined a specimen which professed, upon good European authority, to be that species. Careful examination, however, of the

* The tarsus, middle toe and claw together, of the specimens under consideration, measure absolutely 1.20 inches; the same parts in *linarius* are about one inch; in *exilipes* .80 of an inch.

figures and diagnoses of the various authors who have treated of this bird has shown that there are assigned to *Egiothus Holbölli*, as distinctive characters, exactly those differences from the *linarius* which exist in the specimens under consideration,—viz. : larger size, larger, more elongated and bright yellow bill, and larger gular spot. I think there can be no reasonable doubt that these specimens represent in North America the form long recognized in Europe under the name of *Egiothus Holbölli*.

If this be the case, next comes the question, what rank are we to accord to this form. Is it to be looked upon as an accidental variation from the type,—as a well marked variety,—or as a distinct species? Brehm was the first to proclaim it as distinct, and give it a name. Temminck, Schlegel, Bonaparte, and other authors,—who are rather more orthodox in their ideas of a species than is Brehm,—have always inclined, more or less decidedly, to the opinion that it is rather a race or subspecies of *A. linarius*. The fact of there being a complete gradation towards the *linarius*, has not escaped attention, and has been a powerful argument against according to it full specific rank. For my own part, though unable to demonstrate the point incontrovertibly, I am inclined to reiterate still more strongly the doubts expressed in my Monograph, as to the propriety of separating it from the *linarius*.

Pursuing this question of the variations which *A. linarius* presents, we find another species,—*A. rufescens*,—which has never been able to fully vindicate its claims to specific distinction. First introduced by Vieillot, its existence was strenuously denied by Temminck, doubtfully regarded by Bonaparte and Schlegel, and admitted by Cabanis and others. I have always entertained strong doubts as to its validity. The characters assigned are slight enough; and that they exhibit a gradation towards *A. linarius*, is admitted even by those who contend for its separation from that species. In examining two hundred or more specimens, I find many individuals, fully as small, in fact, and with as much of a reddish tinge, as specimens from Europe labelled "*rufescens*" by good authority.

The existence, then, in North America of these two races, or species, which ever they may be, the one larger and the other smaller than the typical *linarius*, may be considered as exceedingly probable, if the fact be not actually demonstrable. As a sort of negative argument, I may remark, that one might naturally look for their occurrence in this country as the typical *linarius* from Europe is absolutely identical with our own.

Egiothus rufescens and *A. Holbölli*, compared with *A. exilipes*, afford a good illustration of the limits between which a species may vary from its normal type; while another species, looking at first glance more like this type than do either of its extremes, is permanently distinct.

I have no reason to change any of the views expressed with regard to three new species I have introduced. Additional specimens confirm the position assumed, especially regarding *A. exilipes*. I may here, however, correct a typographical error, which gives the date of the first introduction of *A. fuscens* as "Aug., 1860," instead of "Aug., 1861."



cous; a large black discal spot on each wing: two or three obsolete spots near anal angle, the second from the angle with a faint yellow lunule; fringe brownish white.

Under side greyish white, bluish next base; primaries have a fuscous spot near base, a discal bar and a transverse sinuous row of elongated fuscous spots, each edged with whitish; along the margin obsolete spots surmounted by faint lunules.

Secondaries have three fuscous points near base; a discal bar and a transverse sinuous row of fuscous spots; whole hind margin bordered by small metallic blue spots, each surmounted by a blackish lunule.

Female. Upper side clear brown; the obsolete spots next anal angle surmounted by a narrow crenated yellow band; under side as in male, but the five spots next anal angle are surmounted by ochrey yellow lunules edged above with black; fringe long and fuscous at the extremities of the nervures.

California, from Dr. H. Behr.

LYCÆNA SCUDDERII, Edw.

Female. The more common form differs somewhat from that heretofore described, which appears to have been a variety, in that the base of both wings is violet blue, and the black marginal spots of secondaries distinct, the two or three next anal angle surmounted with fulvous; under side as in the male.

This species is found abundantly near London, Canada West, as I am informed by Mr. W. Saunders. I have also received it from Fort Simpson.

PARNASSIUS SMINTHEUS, Doubleday: figured in Genera of Diurnal Lepidoptera, but not described.

Expands $2\frac{1}{2}$ inches. Size and form of *Clarius*.

Male. Both wings pure white, semi-transparent at apex of primaries; hind margin of primaries sprinkled with black scales which take the form of indistinct lunules; a second similar series anterior to these; a black bar on the arc, and, within the cell, a transverse, elongated black spot that terminates a little short of the median nervure; on the costa beyond the cell, a crimson spot in a black ring, and below this a black spot with crimson centre; a small black spot within the inner margin; base of wing and edge of costa thickly sprinkled with black scales; fringe white, cut with black at the ends of the nervures.

Secondaries black at the base and along the abdominal margin, from which black scales extend to the cell and around the arc; a submarginal row of obsolete black spots; a small crimson spot on costal margin and a larger and brighter one in the disc, both in black rings.

Under side with all the markings of the upper, but less vivid in color; secondaries have an additional small crimson spot within the abdominal margin near the anal angle, and at the base four crimson spots in a curved band, each more or less edged with black: the spot in the disc with white centre.

Female. A little larger than the male; the whole hind margin of primaries semi-transparent, enclosing a transverse row of white lunules, but without other spots; the red spots larger and paler, the one on disc of secondaries with white centre; on the under side of secondaries the costal spot also has a white centre, and near the anal angle are two red spots.

California.

LIMENITIS EULULIA, Doubleday: figured in Genera of Diurnal Lepidoptera, but not described.

Expands $2\frac{3}{4}$ inches.

Male. Upper side of both wings olive brown, with a blackish tinge upon the outer limb; hind margin bordered by a broad crenated band of lighter color, through which runs a black line; a large golden yellow apical spot fills the space between the marginal band and narrow costal border of primaries; across 1862.]

the middle of the wings a common white band, commencing on the costa of primaries, with a large spot cut into three by the nervures, followed by a second, oval, separated from the first by a wide space, and out of the line in the direction of the inner angle; after this the band is uninterrupted except by the nervures, and diminishes to a point a little within the abdominal margin, on the arc of primaries a narrow, transverse, ferruginous band, and another in the cell, each edged on either side by a black wavy line; a similar line mid-way between these bands; the cell and costa next base have a dull green tinge; at anal angle a black spot within a fulvous lunule; fringe brown, white in the emarginations.

Under side pale brown, with a bronze lustre on secondaries; primaries have a broad hind margin, crenated next the inner angle, with a faint, pale blue line running through it and edged anteriorly by a narrow, pale blue band; the yellow spot as above, but paler; below this and between the marginal and white bands, smoky black; the white band as above but a little enlarged; the bars in the cell larger and fulvous; inner margin next base greyish; hind margin of secondaries narrower than that of primaries, wholly crenated, with a pale blue line running through it and bordered anteriorly by a broad, pale blue band; the white band is edged without, and near its point suffused with light purple; inside the band to the base, are alternate, irregular, transverse bands of purple and lustrous yellow brown; abdominal margin pale blue; the nervures much bordered by purple or blue scales; body above olive brown; beneath, bluish white; antennæ and club dark brown.

Female scarcely differs from the male.

California, from Dr. H. Behr.

Synopsis of the North American Forms of the COLYMBIDÆ and PODICIPIDÆ.

BY ELLIOTT COUES.*

Family COLYMBIDÆ.

Char. Feathers of forehead reaching to the nostrils. Nostrils narrow and linear; their upper edge with a dependent lobe. Lores densely feathered. Tertials short and stiff. Tail fully developed. Tarsus and toes covered with small, regular, polygonal, reticulated plates. Tibiæ feathered on the joint. Toes fully webbed. Claws strong, narrow, oblong, very convex superiorly. Posterior edge of tarsus smooth, formed by a single row of very convex overlapping scales. Lobe of hind toe moderate. Size large; general form stout and strong; body robust; neck short and thick, without crests or ruffs; the back spotted.

Genus COLYMBUS Linnæus.

Colymbus, Linn. 1735, et auct. nec Ill. 1811; nec Pallas, 1811; nec Briss. 1764.

?*Cepphus*, Mœhring, 1752, secundum G. R. Gray.

Cepphus, Pallas, 1811, partim.

Mergus, Brisson, 1764, fide G. R. Gray; nec auct.

* The great accession of new material in the Museum of the Smithsonian Institution has furnished the means of making some additions and corrections to the last account of the Loons and Grebes of North America—that by Mr. Lawrence in the General Report. The writer having lately been occupied, in connection with Dr. Geo. Suckley, U. S. A., in the preparation of a Government Report, took the opportunity to institute a thorough revision of the two families. The results of that investigation will be found in full in the Report alluded to; but as it may be some time before its publication, it has been thought advisable to issue in advance this brief synopsis. Particular attention has been paid to the characters of the families and subfamilies, and to the arrangement of the species under their appropriate genera.

Urinator, Cuvier, 1799-1800, fide G. R. Gray.

Eudytes, Illiger, 1811; (*Eudites*, Kaup, 1829.)

1. *COLYMBUS TORQUATUS* Brünnich.

C. torquatus, Brünn. 1764; *C. glacialis*, Linn. 1766, auctor. pleriq; ad.—

C. immer, Brünn. 1764; Linn. 1766; Gmel. 1788; Lath. 1790; juv.—

Cepphus torquatus, Pall. 1811, ad.; *C. imber*, Pall. 1811, juv.; *Eudytes glacialis*, Illiger, 1811; *Eudites glac.* Kaup. 1829.

2. *COLYMBUS ADAMSH* G. R. Gray.

Colymbus Adamsii, Gray, Proc. Zool. Soc. Lond. 1859, 167.

Sp. Ch. Form and general appearance that of *C. torquatus*, but larger, with the bill disproportionately larger, and differently shaped.

Bill very large and strong, about equal in length to the head, longer than the tarsus, greatly compressed, the tip very acute, not decurved. Culmen very slightly, scarcely appreciably, convex. Commissure perfectly straight. Gonys straight, or very nearly so, to the angle, which is prominent, well defined; and straight, or even a little concave, to the tip. Feathers of forehead extending beyond the middle of the nostrils. Groove along the symphysis of the lower jaw extending but little beyond the angle.

Adult.—Bill light yellowish, growing dusky at the base. Head and neck all round deep steel blue, with purplish and violet reflections, and glossed on the back of the neck with deep green. Gular patch of white streaks very small, less than in *torquatus*, but the individual streaks larger, as are also those on the side of the neck. Upper parts generally as in *torquatus*, but the spots considerably larger, and on the scapulars and tertials rectangular, instead of nearly square, being much longer than broad. Otherwise like *torquatus*.

Plumage of the young unknown.

Bill above 3.70; along gape 5.25; height ~~of~~ nostril anteriorly 1.10; width, .50; tarsus 3.50; outer toe 4.65 inches. "Irides light reddish-brown, legs and feet olivaceous."

Habitat. Russian America (Gray). Arctic America (Ross, Kennicott).

Table of Distinctive Characters.

C. torquatus. Bill 2.75 inches, not longer than the tarsus; moderately compressed; black; the tip only sometimes yellowish. Culmen very convex. Commissure decurved. Gonys regularly convex throughout its whole length, the angle scarcely appreciable; the groove along symphysis extending nearly to tip. Feathers of the forehead falling short of the middle of the nostrils. Head and neck mostly deep glossy green. White spots of back moderate, scarcely longer than broad.

C. Adamsii. Bill 3.75; longer than the tarsus; exceedingly compressed; light yellow, except at base. Culmen very slightly convex. Commissure straight. Gonys straight, or nearly so, to the angle, straight, or even a little concave to the tip, the angle prominent, well defined. Groove along symphysis very short. Feathers of forehead extending beyond the middle of the nostrils. Head and neck mostly deep steel blue. White spots of back large, much longer than broad.

There cannot be, I think, the slightest doubt of the specific distinction of the present species and the *C. torquatus*. The difference in the size, shape, and color of the bill alone would separate the two, were there no other characters involved. It is every way a much larger bird. The species is, so far as we are aware, now for the first time presented in an American work. The original description, by Gray (as above), is very brief, but the distinctive characters of the species are so concisely stated that we have no difficulty in identifying the large series before us with the description. The Loon mentioned by Audubon, as having "the point of the bill recurved, and of a fine yellow tint," was very possibly an individual of this species. The type of 1862.]

act

the species is from Russian America. The large series which the Smithsonian possesses, were collected in the vicinity of Great Slave Lake and McKenzie's River, by R. Kennicott and B. R. Ross, Esqrs. It has not been obtained from the Atlantic coast.

3. *COLYMBUS ARCTICUS* Linnæus.

C. arcticus, Linn. 1735, et auct. *Cepphus arct.* Pall. 1811. *Eudytes arct.* Illig. 1811.

4. *COLYMBUS PACIFICUS* Lawrence.

C. pacificus, Lawr. Gen. Rep. Birds, 1858, 889.

Sp. Ch. Generally similar to *C. arcticus*, but every way smaller; the wing from an inch to two inches shorter, the legs and feet proportionately shorter, and the bill smaller, shorter, weaker, usually with a less decurved culmen, and more acute tip. Colors precisely as in *C. arcticus*. "Length 25 inches; wing $11\frac{1}{4}$; bill $2\frac{1}{2}$; tarsus $2\frac{3}{4}$."

Habitat. Northern North America. Pacific coast.

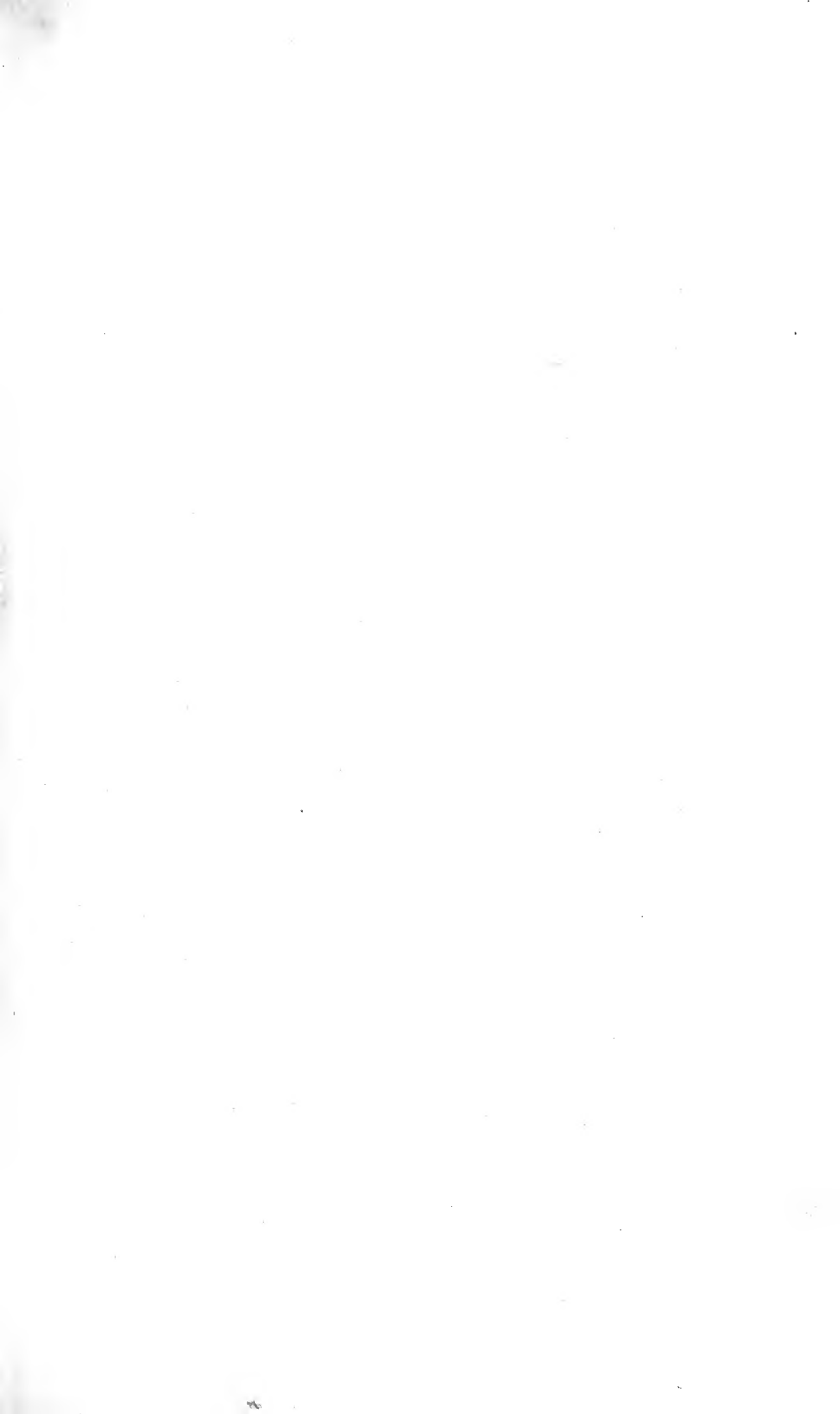
The types of Mr. Lawrence's *C. pacificus* are young birds, and their relationship can only be determined by their size and form. A comparison of these types with an extensive series of skins of the adult bird, from the interior of Northern North America, has shown them to be beyond a doubt identical. The entire series differs from a fine adult European bird furnished for examination by the Copenhagen Museum, in those points which are given in the diagnosis. The difference is very marked indeed, and while all the birds in the North American series agree perfectly with each other, there is, at the same time, not the slightest graduation between them and the European bird. This would seem to indicate that the North American bird is distinct from the European; or, in other words, that "*Colymbus pacificus* Lawr." is the "*Colymbus arcticus ex America*." Upon this supposition it would be necessary to exclude the *C. arcticus* from our avi-fauna. There is in the collection, however, a specimen (from Puget Sound) which is fully as large as the European bird, with which it agrees in the minutest particulars, and is much larger and stouter every way than the rest of the series. I have, therefore, at present no other alternative than to admit the *C. pacificus* as distinct from the *arcticus*, in view of the differences constantly observable, and at the same time to retain the latter as an inhabitant of North America. I think it probable, however, that if the true *arcticus* is really found in North America, it is rather as an infrequent visitor than as a permanent resident. I do not regard the question as yet definitely settled, especially as the single European skin examined may have been an unusually large specimen. Further investigation will be necessary to definitely settle the point.

Should the *pacificus* prove to be really distinct from the *arcticus*, it would be another example of a peculiar law which prevails extensively throughout the *Colymbidæ* and *Podicipidæ*. This is, that nearly all the species have, so to speak, their analogues, agreeing in colors and general appearance, but differing in size, and in the size, shape, and stoutness of the bill. Instances are seen in the cases of *Colymbus Adamsii* and *torquatus*; *Podiceps grisieana* and *Holbøllii*; *P. cornutus* and *arcticus*; *Aichmophorus occidentalis* and *Clarkii*; *Podilymbus podiceps* and *brevirostris*, etc. This law seems capable of very extensive application.

5. *COLYMBUS SEPTENTRIONALIS* Linnæus.

Colymbus septentrionalis, Linn. 1766, et auct. *C. lumme*, Brünn. 1764, ad. *C. stellatus*, Brünn. 1764; Gmel. 1788; Lath. 1790; juv. *C. striatus*, Gmel. 1788; Lath. 1790; juv. *C. borealis*, Brünn. 1764; Gmel. 1788; Lath. 1790. *Cepphus septentrionalis*, Pall. 1811. *Cepphus stellatus*, Pall. 1811.

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Family PODICIPIDÆ.

Char. Feathers of forehead not reaching to the nostrils. Nostrils linear, oblong, sometimes quite broadly oval, without dependent lobe. Lores naked. Tertials long, reaching to the tip of the primaries in the closed wings. Tail rudimentary. Tarsus and toes covered with regular, long, narrow, transverse scutellæ. Toes lobed, connected at base by a membrane. Tibiæ feathered to the joint. Claws weak, broad, short, flat. Posterior edge of tarsus serrated, formed by a double row of small, pointed scales. Lobe of hind toe large. Size moderate, or very small; general form rather slender; body depressed; neck long; crests or ruffs usually present; the back never spotted.

The preceding diagnosis expresses very briefly the more prominent characters of a group of birds composing the subfamily *Podicipinæ* of modern authors. It corresponds with the *Colymbi pedibus palmatis* and *pedibus lobatis* of Gmelin, nearly with the *Cephi* and *Colymbi* of Pallas, and with the genera *Colymbus* and *Podiceps* of Latham. Although related to the *Colymbidæ* in most points of structure and habits, they nevertheless differ in so many and so essential characters, that a single family cannot, without great latitude of definition, contain the two groups. We have, therefore, restricted the *Colymbidæ* to the *Colymbinæ* of authors, and raised the *Podicipinæ* to the rank of a distinct family.

Two subfamilies are represented in North America.

Subfamily PODICIPINÆ.

Char. Bill moderately stout, or very slender. Commissure not abruptly decurved at the end. Nostrils linear. Bare loreal space narrow and linear. Feathers of the head with their shafts normal. Tarsus at least three-fourths the middle toe; generally but little, if any, shorter. Toes connected at base for a moderate distance, the lobe of the hind toe broad. Usually (always?) with more or less conspicuous crests and ruffs.

Genus I. ÆCHMOPHORUS Coues. N. G.

Gen. Char. Bill very long, exceeding the head, straight or very slightly recurved, slender, attenuated towards the tip, which is very acute. Culmen straight or slightly concave. Commissure about straight. Gonyes convex throughout its whole length, the angle scarcely appreciable. Nasal groove long, shallow, and narrow. Bare loreal space very narrow. Wings rather long, pointed, the outer primaries much attenuated. Legs very long. Tarsus as long as the middle toe and claw, exceeding the bill, excessively compressed. Outer lateral toe much longer than the middle. Lobes united at base for a very short distance. Size large; body slender; neck very long. Head with moderate crests, but without decided ruffs?

Type. *Podiceps occidentalis*, Lawr.

1. ÆCHMOPHORUS OCCIDENTALIS (Lawr.)

Podiceps occidentalis, Lawr. 1858.

Char. Length about 29 inches; wing 8.25; bill or tarsus 3.00. Bill equal to tarsus, straight, dark colored, except terminally and along the cutting edges. Gonyes straight from base to angle, and nearly so from angle to tip. Feathers between eye and nostril grayish ash.

Habitat. Pacific coast of North America.

2. ÆCHMOPHORUS CLARKII (Lawr.)

Podiceps Clarkii, Lawr. 1858.

Char. Much smaller than *A. occidentalis*. Length 22 inches; wing 7; bill 2.25; tarsus 2.75; bill rather shorter than tarsus, exceedingly acute, slightly recurved; the gonyes regularly much curved from base to tip, the angle scarcely apparent. Feathers between eye and nostril white.

Habitat. Pacific coast of North America.

1862.]

Genus II. PODICEPS Latham.

Colymbus, Briss. 1760, nec. Linn. et auct. Ill. 1811; Pall. 1811.

Podiceps, Lath. 1790; (typus *Col. cristatus*, Linn.) nec Kaup. 1829.

Pedetaithya, Kaup. 1829; typus *Col. griseigena*, Budd. 1783.)

Lophafthya, Kaup. 1829; (typus *Col. cristatus*, Linn. *Podiceps*, Lath. 1790.)

Dytes, Kaup. 1829; (typus *Col. cornutus*, Gmel.)

Proctopus, Kaup. 1829; (typus *Col. auritus*.)

Otodytes, Reichenbach, 1853; (typus idem.)

Gen. Char. Bill moderately stout; usually more or less compressed; as long as, or rather shorter than, the head; not equalling the tarsus. Culmen convex, occasionally nearly or quite straight. Commissure about straight. Tarsus shorter than the middle toe and claw. Outer lateral but little, if any, longer than the middle toe. Body depressed, moderately full; head always with more or less conspicuous crests and ruffs.

Although the characters of the genus are drawn so as to exclude both the foregoing and succeeding genus, the North American species comprised in it, are sufficiently dissimilar in form to have caused the instituting of several subgenera. These may be characterized and arranged as follows:—

A. Tarsus equal to the middle toe without the claw.

I. Bill equal to the head, four-fifths the tarsus. Bill much compressed, lateral outlines a little concave. Crests and ruffs very long and conspicuous.....

Podiceps, Lath.

II. Bill much shorter than the head, but little more than half the tarsus.

1. Bill compressed, higher than broad at the nostrils; crests and ruffs, especially the latter, very long and full.....

Dytes, Kaup.

2. Bill depressed, broader than high at the nostrils; crests and ruffs more moderate.....

Proctopus, Kaup.

B. Tarsus about four-fifths the middle toe and claw.

III. Bill variable in length, always quite stout; outer lateral but little longer than the middle toe; crests and ruffs rather short.....

Pedetaithya, Kaup.

1. PODICEPS CRISTATUS Latham.

Colymbus cristatus, Linn. 1766; Pall. 1811; Ill. 1811. *C. urinator*, Linn. 1766, juv. *Podiceps crist.* Lath. 1790, et auct.

Habitat. Europa; Amer. Sept.

2. PODICEPS COOPERI Lawrence.

Sp. Char. Bill large and strong, as long as the head, very stout at the base, the tip very acute and considerably decurved. Upper mandible with the culmen very slightly concave on the basal half, the terminal portion regularly convex. Commissure irregularly sinuate to the nostrils, then regularly decurved, the radius of curvature decreasing towards the tip. Lower mandible without a groove along the symphysis of the rami beyond the angle, the tip decurved and very acute. Lower outline concave, both anterior and posterior to the angle, which is prominent and marked; the concavity is very decided in the former. First and second primaries longest, third but little shorter. Tarsi and toes as in *P. cristatus*.

Young. Upper mandible dusky, except the tip and extreme base, which are yellowish, as is also the lower mandible, except a central dusky greenish space. No white space between eye and nostril. Slight indications of a crest, but none at all of a ruff. Crown, and median dorsal line of neck, deep blackish brown, darkest on the former. Upper parts brownish black, darkest on the scapulars and lower part of the back, all the feathers, especially an-

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teriorly, edged with grayish. Primaries rather light chocolate brown, their shafts and tips black. Secondaries white, their inner vanes brown towards their extreme tips. Wing coverts wholly chocolate brown.

Dimensions. Bill above 2.40, along gape 3.10, height at nostril .55, from angle of gonys to tip 1 inch; wing 8.80; tarsus 2.40; middle toe, 3.10.

Habitat. Shoalwater Bay, W. T.

A species admitted with some doubt, but probably distinct from the preceding. It must be obtained in full plumage before the question of its relationship can be definitely settled. We do not consider it by any means certain that it will possess the conspicuous ruffs of *P. cristatus*. In that event, it would more probably fall in some other subgenus.

3. *PODICEPS (DYTES) CORNUTUS* (Gmelin.).

Colymbus cornutus, Gmel., 1788; Pall., 1811; ad. *C. obscurus*, Gmel., 1788, et *C. caspicus*, Gmel., 1788; juv. *C. nigricans*, Scopoli, fide Lawr. *Podiceps cornutus*, Lath., 1790, et auct. ? *P. arcticus*, Boie.

Habitat. Europ. Amer. Sept.

4. *PODICEPS (PROCTOPUS) CALIFORNICUS* Heermann.

Podiceps auritus ex America; e. g. Aud. B. Am., 1844, vii. 322. Lawr. Gen. Rep. 1858, synon. excl. Nec *Colymbus aur.* Linn.; nec script. Europ. *P. Californicus*, Heermann, 1854; Lawr., 1858.

Char. Generally similar to *P. auritus* of Europe; all the primaries chocolate brown throughout their whole extent, with a more or less notable amount of dull reddish externally. Secondaries white, the two outer ones dusky along their centres for their whole length, and the bases and shafts of all of the same color.

Habitat. Western and Northern North America; California; Great Slave Lake.

In 1854, a *Podiceps californicus* was characterized, as above, based upon an immature or winter specimen. Examination of the type, and quite a series of additional specimens, has shown that it is merely the American form of *P. auritus*. The name would, therefore, become a synonym were it not for the fact that, in all probability, the American and European birds are specifically distinct. The differences are those given in the diagnosis. In the American Eared Grebe, all the primaries are throughout their whole extent dark chocolate brown, with a more or less notable amount of dull reddish in the adult. The two first secondaries are of the color of its primaries, and bordered with white; and the basal portions and shafts of all, for the greater part of their length, are of the same chocolate brown. In all the specimens of the European type examined, the characters of the wing are very different. The four inner primaries are wholly pure white; the next is white with a sprinkling of brown on the outer web; the next is white, its outer vane brown; and all the others have more or less white at their bases and on the inner webs. All the secondaries, except the three innermost are entirely pure white, and their shafts are white to the very base. The three innermost have a dusky spot near the end of the outer web. These differences, so far as we can discover, are constant; and if so, quite sufficient to separate the two.

Although "*californicus*" was not so characterized as to show any tangible distinctive features from the *auritus*, we prefer to adopt it, as the necessity for a new name will thereby be obviated.

5. *PODICEPS (PEDETAITHYA) HOLBÖLLI* Reinhardt.

Pod. rubricollis, Audub. et al. script. Amer.; nec Lath., 1790, et auct. Europ. *P. griseigena*, Lawr., 1858, excl. synon. Nec *Colymbus griseigena*, Bodd. *P. Holbölli*, Reinhardt, 1853.

Sp. Char. Generally similar to *P. griseigena*, but larger, with the bill disproportionately longer, stouter, and differently colored. Bill about equal to 1862.]

the head, shorter than the tarsus. Length about 19 inches, wing 7.60. Bill above 1.90, along gape 2.40, height at nostril .55. Tarsus 2.10; middle toe and claw 2.65.

Habitat. North America, generally.

The present species has by most authors been considered identical with the *P. griseigena* Bodd. (*rubricollis* of Latham,) of Europe. The differences, however, as pointed out by Reinhardt, are quite tangible, and so constant as to render it very probable that they are of specific value. In the European bird the bill measures 1.50 along the culmen, 2.00 along the gape, and .50 in height at the nostrils; the wing less than 7 inches. (See diagnosis for comparison). In color, too, the bills differ. In *P. griseigena* the extreme base of the under mandible only is yellow, the color extending a little on the cutting edge of the upper mandible at base. In *Holbölli* nearly the whole of the under mandible, and the cutting edge of the upper, are yellow.

Genus III. SYLBOCYCLUS Bon.

Podiceps, Kaup, 1829, nec Lath.

Sylboocyclus, Bonaparte, 1832. (Typus *Pod. minor*, fide G. R. Gray.)

Tachybaptus, Reichenbach, 1851. (Typus idem.)

Gen. Char. Bill very short, much less than the head, scarcely more than half the tarsus; very stout, little compressed, the tip obtuse; lateral outlines about straight; culmen a little concave at the nostrils, convex throughout the rest of its length; gonys straight to the angle, and from angle to tip; the former well defined. Wings short; attenuation of primaries considerable; abrupt on the inner web. Tarsus stout for this family, much abbreviated, scarcely more than three-fourths the middle toe and claw. Outer lateral toe about equal to the middle. Size small; body full; neck short; without decided crests or ruffs.

1. SYLBOCYCLUS DOMINICUS (Linn.)

Podiceps dominicus, Linn., 1766. *Sylboocyclus dominicus*, —?

Sp. Char. Adult.—Without decided crests, but indications of them in the length and fulness of the feathers of the parts. Crown and occiput deep glossy steel blue. Sides of head, and neck all round dark ashy gray, deepest behind, where it is tinged with bluish. Chin variegated with ashy and white. Upper parts generally brownish black, with glossy greenish reflections. Primaries chocolate brown, the greater portions of the inner vanes of all, the whole of the four or five inner, except just at tip, together with the secondaries, pure white. Under parts silky white, thickly mottled with brownish dusky; the abdomen uniform dusky gray. Upper mandible dusky, the lower mostly yellowish.

Dimensions. Length 9.50; wing 3.60; bill above .70; along gape 1.00; tarsus 1.25; middle toe 1.75.

Habitat. Central America; Mexico; Antillean Is.; Gulf of California (Gambel); Rio Grande (eggs in Smiths. Coll.).

[NOTE.—*Sylboocyclus minor*, the type of the genus, is given by Nuttall as an inhabitant of North America; but its existence in this country is very doubtful.]

Subfamily PODILYMBINÆ.

Char. Bill exceedingly stout. Commissure abruptly decurved at the end. Nostrils broadly oval. Bare loreal space broad. Feathers of the forehead with their shafts prolonged into stiff bristles. Tarsus not three-fourths the middle toe. Toes connected at base for a considerable distance; the lobe of the hind toe moderate. Without decided crests or ruffs.

Genus IV. PODILYMBUS Lesson.

Podilymbus, Lesson, 1831. (Typus *Colymbus podiceps*, Linn.)

Hydroka, Nuttall, 1834.

Dasyptilus, Swainson, 1837, fide G. R. Gray.

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Gen. Char. Bill shorter than the head, compressed, exceedingly stout, obtuse at the end; culmen straight to the nostrils, then very convex to the decurved and acute tip of the upper mandible. Commissure slightly sinuate at the base, straight to near the tip, where it is suddenly deflected. Gonys regularly convex, the angle scarcely appreciable. Upper mandible covered with soft skin from the base to the nostrils, between which are two fossæ, the anterior shallow and oblong, the posterior triangular and deep, opening into the bare loreal space; the two separated by an oblique ridge. Nostrils situated near the extremity of the anterior fossa. Outer three or four primaries abruptly attenuated near the end. Tarsus much abbreviated, comparatively stout, about three fourths the middle toe and claw. Middle and outer toe nearly equal. Lobes of toes broad, connected at base for a greater distance than in other genera.

1. *PODILYMBUS PODICEPS* (Linn.)

Colymbus podiceps, Linn., 1766. *Podilymbus pod.* Lawr., 1858. *Podil. lineatus*, Heerm., 1854. *Colymbus ludovicianus*, Gmel., 1788. *Podiceps ludov.* Lath., 1790. *Pod. carolinensis*, Lath., 1790. *Sylbeocyclus carol.*, Bon., 1838.

Habitat. Continent of North America.

female(?) and *unusually light colored*, we have had our drawing made, on account of its having been procured in the American territory," while his description is taken "from a handsome male specimen from Arctic America."

The genus *Pediocaetes* therefore is composed of the two following species, with this diagnosis:

General color white and brownish yellow with irregular black-markings. Beneath pure white, the feathers on the breast and flanks with brown U-shaped markings. Throat buff.....*Pediocaetes Columbianus*.

General color white and black, with irregular dark brown markings. Beneath pure white, with V-shaped black marks on the breast and sides, broader and closer than those of its relative. Throat white interspersed with small black marks.....*Pediocaetes phasianellus*.

The species may be more fully described thus:

PEDIOCAETES COLUMBIANUS (Ord.) Elliot.

Tetrao phasianellus? Ord. Guthrie's Geog., 2d Am. ed., 1815, p. 317.

Phasianus Columbianus, do. do.

Tetrao phasianellus, Bon. Syn., 1828, p. 127.

Do. " Am. Ornith., vol. iii. 1828, p. 37, pl. xix.

Do. Nuttall, Man. vol. i. 1832, p. 669.

Do. Audub. Ornith. Biog., vol. iv. 1838, p. 569, pl. 382.

Do. " Syn. 1839, p. 205.

Do. " Birds of Amer., vol. v. 1842, p. 110, pl. 298.

Do. Newberry, Cal. & Or. Route. Rep. P. R. R. Surv., vol. vi. iv. 1857, p. 94.

Tetrao (Centrocercus) phasianellus. Swain, Faun. Bor. Am., vol. ii. 1831, p. 361.

Do. Bonp. Comptes Rendus, xlv. 1857, p. 428.

Tetrao urophasianellus, Doug. Trans. Linn. Societ., vol. xvi. 1829, p. 136.

Pediocaetes phasianellus, Baird, vol. ix. P. R. R., p. 626.

Head and throat brownish yellow, the front, crown, occiput and cheeks irregularly marked with black or very dark brown; superciliary band whitish; back ferruginous brown, variously spotted with black or brownish yellow; wings brownish grey, with large spots of white on all the coverts; transverse bars on the secondaries, and the outer webs of the primaries which are dark brown, spotted with the same; the tail feathers have the inner web white, outer brownish gray, dotted with darker brown; the central feathers are elongated and same color as the back—under parts are pure white, the feathers on the breast and flanks having a brown U-shaped mark. Bill black; feet brown.

Hab.—Northern prairies from Wisconsin to Oregon and Washington territories.

PEDIOCAETES PHASIANELLUS, (Linn.) Elliott.

Tetrao phasianellus, Linn. Syst. Nat., vol. i. 10 ed., 1758, p. 160.

Do. Forst. Philos. Trans., lxii. 1772, p. 394 and 495.

Do. Gmelin Syst. Nat., vol. i. p. 747.

Do. Lath. Ind. Ornith., vol. ii. p. 635.

Tetrao urogallus, var. B., Linn. Syst. Nat., vol. i. ed. 12th, p. 273.

Tetrao phasianellus, Bon. Amer. Ornith., vol. iii. 1828, text ♂. Sharp-tailed Grouse. Pennant.

Pediocaetes Kennicotti, Suckley, Proc. A. Nat. Sc., 1861.

General color black. Top of head black, a few faint marks of rusty towards the occiput, sides of head black, the feathers tipped with white; those on the side and back of neck tipped with rusty; throat white, spotted with black. The back is also black, the feathers margined with rufous brown; the rump is lighter, caused by the feathers being tipped broadly with grayish; the elongated central feathers of the tail are (in the specimen before me) jet black, irregularly crossed with yellowish white and gray. Wings blackish brown, with large white spots on all the coverts, in addition to the rusty

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margins of the feathers; primaries blackish with white marks on their outer webs. Tail sometimes grayish at the base with white tips, or pure white. Under parts pure white, with a black V-shaped mark near the centre of the feathers on the breast and flanks, gradually growing smaller and fainter, as they approach the abdomen and vent. The white feathers of the legs are hair-like and extend over the toes quite to the nails. Bill black; feet dark brown.

Habitat.—Arctic America, plentiful around Hudson's Bay, but never found within the limits of the United States.

Supplementary note to a "Synopsis of the North American Forms of the COLYMBIDÆ and PODICEPIDÆ."

BY ELLIOTT COUES.

Since the publication of my paper on the Loons and Grebes of North America, the Smithsonian Institution has received, from J. Hepburn, Esq., of San Francisco, California, what has long been a great desideratum in its collections, a specimen of *Echmophorus Clarkii* in full plumage. The interest attaching to the elucidation of this hitherto undetermined question in American ornithology induces me to offer the following brief notice of the points in which the nuptial dress differs from the ordinary well known winter plumage. The specimen alluded to, Mr. Hepburn states, was shot in the latter part of April, and is a female.

ÆCHMOPHORUS CLARKII, COUES.—(Adult female, breeding plumage.)—The chrome yellow of the under mandible, and of the tip and cutting edges of the upper, is very bright, and in marked contrast with the quite pure black of the culmen. The bare loreal space is leaden blue. The crown, occiput, and neck behind are very deep grayish black, almost pure black on the occiput, and fading gradually along the neck, into the blackish gray of the back and upper parts generally, which color is scarcely, if at all, deeper than in the average of winter specimens. The white space between the eye and bill is very broad, and remarkably pure. The throat, neck before, and whole under parts are of a beautiful silky white, the line of demarcation of the black and white on the sides of the head and neck being remarkably distinct. *There is a decided occipital crest*; the feathers of that region are about one inch in length, and have the peculiar filiform character common to the crests of birds of this family. This crest, however, on the dried skin lies quite smoothly, and is not very conspicuous except on raising the feathers. *There are no decided colored ruffs*; but the white feathers of the sides of the head posteriorly, and across the throat, are longer and fuller than elsewhere, particularly the former. Although this elongation is hardly noticeable in the dried skin, it is doubtless sufficient to give to the bird when in life something of the appearance presented by most of the species of this family. In other respects the specimen before me does not differ materially from the winter series.

I have always been of opinion that the two birds which I have recently separated generically from *Podiceps* would not possess the conspicuous colored ruffs for which the type of the genus (*P. cristatus*) is so noted. The supposition to that effect, doubtfully set forth in my last paper, is now verified in the case of one of the species of the genus, and I have no doubt that the nuptial plumage of *Echmophorus occidentalis* will be perfectly analogous to that exhibited by the species under consideration.

A specimen of *Podiceps (Proctopus) californicus*, in full summer plumage, has also been received from Mr. Hepburn. It presents the same marked differences from the European *P. auritus* as do all the other specimens from North America which have fallen under my observation; and is additional confirmation of the position assumed with regard to the specific distinction of the American and European birds. They are quite distinct species and recognizable in either adult or young plumage.

[Sept.

1. *M. (Myoconcha) incurva*, C., Miocene, Foss. 52, 28, 1.
2. *M. (Mytilus) incrassata*, C., ib., 74, 42, 4.

PECTENIDÆ.

PECTEN, Lin.

P. fraternus.—Ovate, upper valve slightly ventricose, lower convex depressed; ribs 15 or 16, prominent; convex, laterally flattened, narrower than the interstices, trilineate, squamose; interstices with fine, unequal, delicately squamose radiating lines; lower valve, ribs broader, and more numerous lined; ears moderate, with radiating numerous rugose lines.

Locality. Virginia. (Miocene.)

Differs from *P. Jeffersonius* in being comparatively more elevated or ovate; in having smaller ears, and more numerous and narrower ribs, &c.

P. Edgcomensis.—Suborbicular; height not quite equal to the length; lower valve-ribs 16 to 17, prominent, but not elevated, square or convex-depressed, not quite as wide as the intervening spaces, radiately lined with finely squamose striæ, most conspicuous towards the margins, interstices of ribs carinated, in the middle squamose and finely striated; ears with fine close unequal squamose radiating lines, the larger ones most prominent on the posterior side; margins of ligament pit carinated.

Locality. Edgewood Co., North Carolina. Cab. Smithsonian Institution.

Allied to *P. eboreus*; the carina between the ribs distinguish it from that species. (Miocene.)

LYROPECTEN, Conrad.

Inequivalve, radiately costate; hinge with a triangular pit as in *Pecten* and diverging prominent teeth on each side the ligament cavity.

Lyropectin (Pallium) estrellanus, C., Pacific R. R. Reports, 1855, vi. pl. 3, f. 15.

This genus is peculiar to the Miocene of the Pacific slope, and appears in three large species, the second of which has been figured and described as *Pallium estrellanum*, in Pacific Railroad Reports, vol. vii. 191, but is very distinct from that species. I propose to name it *Volæformis*.

L. crassicardo.—Suborbicular; ribs 15; larger valve ventricose; ribs rounded, not quite as wide as intervening spaces; whole surface radiately striate with equal lines, about 11 on the ribs and 5 on the interstices; opposite valve convex, ribs prominent, narrower and more abrupt than in the large valve, disposed to be concentrically nodulous or undulated by broad concentric furrows, and sometimes an abrupt concentric truncation.

Locality. California.

OSTRIADÆ.

OSTREA, Lin.

O. falciformis.—Falcate, radiately ribbed; ribs numerous, regular, close, rounded, crossed by squamous lines; ribs small on the anterior depression; margins plicated, not crenulated; ligament cavity oblique.

Locality. Enterprise, Clark Co., Miss. Dr. Spillman. (Eocene.)

Revision of the GULLS of North America; based upon specimens in the Museum of the Smithsonian Institution.

BY ELLIOTT COUES.

The present paper is an abstract of a more extended Monograph on the Gulls of North America, prepared for publication in a Government Report. 1862.]

As some time, however, may elapse before the appearance of the Report, it has been thought advisable to issue in advance this brief sketch of the subject. Except in the cases of one or two species, everything not absolutely necessary to the proper understanding of the subject has been omitted. In the Monograph alluded to will be found references to the pages of the works of the authors cited; descriptions of the various changes and stages of plumage; together with a discussion of doubtful points of synonymy, and the arguments for the views entertained. It is also illustrated by figures of the bills of all the species, and colored drawings of the primary quills, showing the outlines and extent of their markings. The gulls of North America are worked up to the fullest extent that the specimens at my command allow; but, in the apparent hopelessness of arriving at ultimate truth with regard to these birds, I am prepared to relinquish any of the views now entertained which future investigation may prove to be erroneous.

Family LARIDÆ.

The family Laridæ, embracing the Jägers, Gulls, Terns and Skimmers is divisible into four subfamilies, which may be distinguished by the following brief diagnosis:

LESTRIDINÆ.—Covering of upper mandible not continuous, the basal half with a somewhat horny overlapping plate, differing in character from the terminal portion; the nostrils opening beneath it, but slightly above the cutting edge, and beyond the middle of the bill. Tail cuneate, the central feathers projecting, usually tapering and much elongated, the lateral stiff and acuminate. Interdigital webs more or less rounded. Body full, stout; size usually moderate.

LARINÆ.—Covering of bill continuous. Bill more or less robust, the culmen about straight to the nostrils, abruptly decurved to the tip, which overhangs the tip of the lower mandible. An angular projection at the symphysis of the lower jaw more or less prominent. Nostrils at the end of the basal half of the bill. Tail generally even, the feathers being all of the same character. Webs more or less indented. Inner lateral toe moderate. Body robust; size very large or moderate.

STERNINÆ.—Covering of bill continuous. Bill slender and tapering to a very acute point, the tip not abruptly decurved, nor overhanging the lower mandible. Curve of culmen and commissure regular and gradual from base to tip. Angle of lower mandible scarcely apparent. Nostrils on the basal third of the bill. First primary greatly longer than the second. Tail generally forked. Inner lateral toes very short. Webs indented. Body rather slender and graceful; size moderate or very small.

RHYNCHOPINÆ.—Bill excessively compressed, like the blade of a knife. Upper mandible abruptly shorter than the lower. Otherwise generally as in *Sterninæ*.

We have at present only to do with the second of these groups, the

Subfamily LARINÆ.

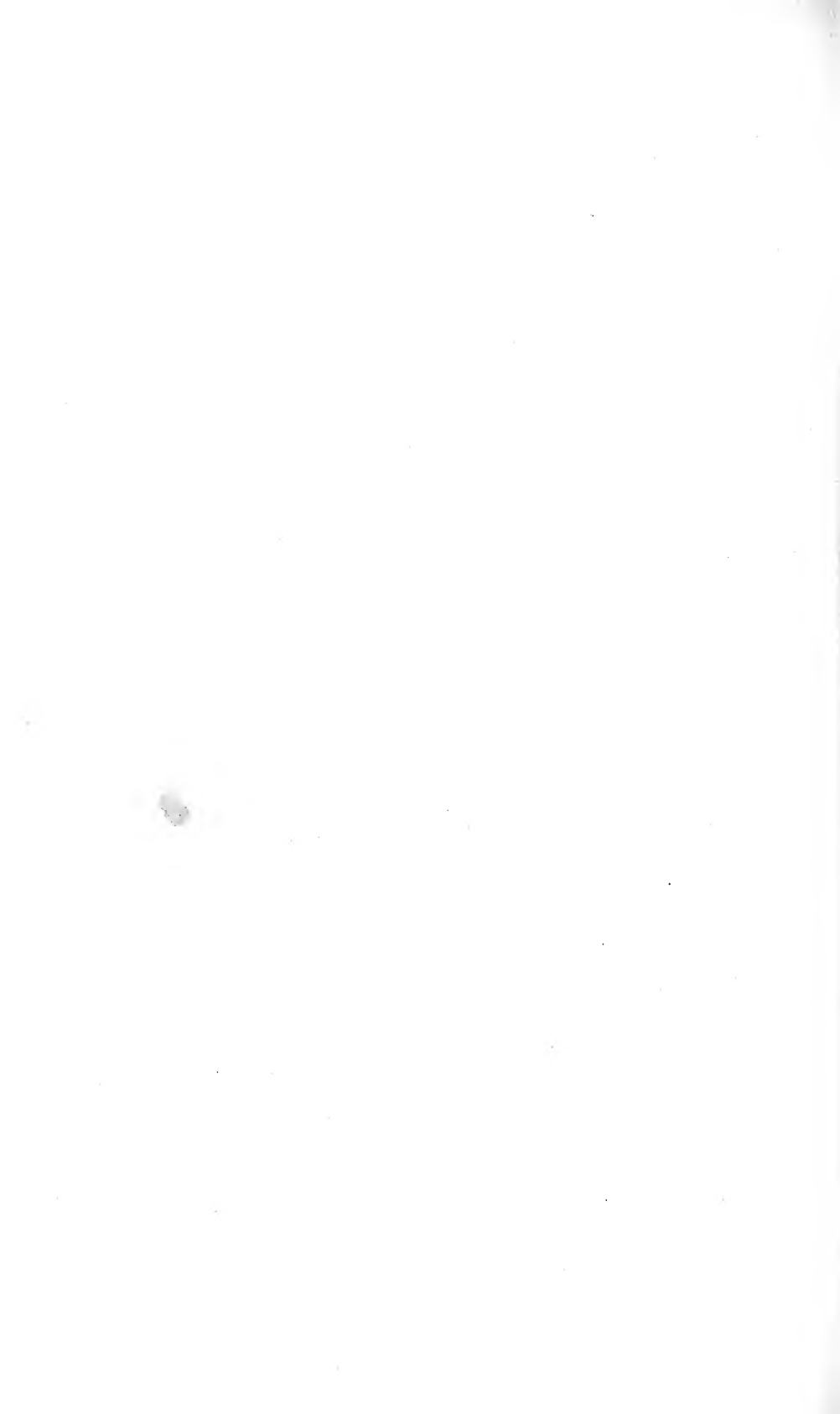
Of the many genera into which the Gulls have been divided by systematic writers, North America contains representatives of eight, which seem to differ in well marked characters. They may be arranged in two sections and very briefly defined as follows:

A.—LAREÆ.

Size very large, large, or moderate. Body robust, general organization more or less powerful. Bill stout and deep, the angle prominent, the tip obtuse, seldom attenuated or much decurved. Tail never cuneate or decidedly

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forked. Legs rather stout; hind toe sometimes rudimental. Head never with a hood; in winter with the neck streaked with dusky. Under parts white without a decided roseate tint.

1. *Larus*.—Size large or moderate. Bill stout, robust, obtuse, the tip not attenuated, the angle usually very prominent. Convexity of culmen great at the ends. Color white, nearly always with a darker mantle. Tail even.

2. *Blasipus*.—Size moderate. Bill rather slender, its tip somewhat attenuated. General color dusky. Tail even, or very slightly emarginate.

3. *Rissa*.—Size rather small. Bill stout at base, but more attenuated and decurved at the tip. Angle acute, but not very prominent. Hind toe rudimental. Tail even; somewhat emarginate in the young.

4. *Pagophila*.—Size rather small. Bill short, stout, obtuse. Tarsus very short, stout, arm rough. Tibiæ partially feathered. Webs excised. Color entirely pure white.

B.—XEMEE.

Size moderate, small, or very small. Body more slender, general organization more delicate. Bill generally slenderer and more acute, the angle not very prominent, but acute, the tip decurved and attenuated. Tail variable, even, forked, or cuneate. Legs rather slender. Hind toe always present. Head usually with a hood, or with a black ring round the neck. Under parts white, with a decided roseate tint.

5. *Chroicocephalus*.—Size moderate and very small. Bill slender, the tip more or less decurved. Tail even.

6. *Rhodostethia*.—Size small. Bill short and very slender. Neck with a black ring, but head without a hood. Tail cuneate.

7. *Xema*.—Size small. Bill short, rather slender, the angle acute. Head with a hood and neck with a ring. Tail moderately forked.

8. *Creagrus*.—"Of medium size; bill very strong and much curved; mantle grayish white; tail deeply forked."—Lawr.

The above brief characters define the genera sufficiently for our present purposes; the aim being rather the determination of species than rigid systematic classification.

Genus 1. *LARUS*, Linnæus.

Larus, Linn. 1744; nec 1735; (typus *L. canus*, fide Gray.)

Gavia, Moehring, 1752; nec auct.

Leucus, Kaup, 1829.

Laroides, Brehm, 1830; t. *L. argentatus*, Brünn. Bp. 1856; (typus idem.)

Plantus, Reichenbach, 1853.

Glaucus, Bruch, 1853; (t. *L. glaucus*, Brünn.)

Dominicanus, Bruch, 1853; (t. *L. marinus*, Linn.)

Gavina, Bp. 1854, fide G. R. Gray; nec Bp. 1856.

Laroides, Bruch, 1855; (t. *L. glaucus*, Brünn. = *Glaucus*, Bruch, 1853.)

Leucus, Bp. 1856; (t. *L. glaucus*, Brünn. Emend. *Leuc.* Kaup, 1829 = *Laroides* Bruch, 1855, vel *Glaucus*, Bruch, 1853.)

The eleven species of the genus found in North America may be very naturally arranged under the following sections or subgenera:

Section A.—*LEUCUS* Bp. (*Plantus*, Reich. *Glaucus*, p. Bruch, 1853, *Laroides* p. Bruch, 1855.) Large and powerful; primaries without any black; upper parts very light.

a. Color above entirely white.

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1. *LARUS HUTCHINSII* Richardson.

?*L. glacialis*, Benicken (nec Macgill. qui *L. glaucus*, Brünn.) *Glaucus glac.* Bruch, 1853. *Laroides glac.* Bruch, 1855. *Leucus arcticus*, "Macg." Bp. 1856, excl. synon. (nec Macg.) *Larus Hutchinsii*, Richardson, F. B. A. 1831, ii. 419.

Sp. char.—Adult: Bill flesh-colored at base, blackish on terminal third. Entire plumage pure white, the shafts of the feathers straw yellow. Feet light flesh-color. Young: Head, neck and upper parts mottled with light reddish brown, appearing on the latter as irregular patches, and on the rump as more or less obsolete transverse bars. Under parts a nearly uniform very light reddish brown, the under tail coverts transversely barred with white. Wings and tail pure white. Length $27\frac{1}{2}$ inches; extent 60; wing $17\frac{3}{4}$; bill above 2.40; along gape 3.20. Tarsus 3.40; middle toe and claw 3.50.

Hab.—Arctic America; North Pacific; New York State!

The name "*Arcticus* Macgill." is usually applied to this bird. Bonaparte adopts the name in his *Conspectus*, moreover, considering it identical with *L. argentatus* of Sabine's *Memoir* on the Birds of Greenland. But both these authors speak of a notable amount of blue on the back,—("back pure pearl gray, with a good deal of blue"—"*cærulescente-perlaceo*.") Moreover, Macgillivray himself subsequently says that his *arcticus* is the *leucopterus* Faber. I have not been able to find the original description of *glacialis* of Benicken; but Bruch, who adopts that name, speaks of the "gull-blue" of the upper parts. In the *Fauna Boreali-Americana*, ii. p. 419, there is given a brief description of a Gull, which is certainly, I think, the present species. The names "*arcticus*" and "*glacialis*" being in my opinion untenable, I adopt that of *Hutchinsii*, proposed by Richardson. I have no doubt of the validity of the species.

This species is now introduced into the Fauna of the United States through a specimen killed in Washington co., New York, and presented to the Smithsonian Institution by Mr. Peter Reid. It was killed in midwinter, while feeding on a dead sheep. Other specimens were collected by Mr. Stimpson in Behring's Straits, while connected with the North Pacific Expedition under Capt. Rodgers, U. S. N.

b. Color above very light pearl blue. Primaries like the back, fading insensibly into white at some distance from the tips.

2. *LARUS GLAUCUS* Brünnich.

Larus glaucus, Brünn. 1764 et auct. *Laroides glauc.* Bruch, 1855. *Leucus glauc.* Bp. 1856. *Plantus glauc.* Reich. 1853. *Larus consul*, Boil. 1822. *Glaucus cons.* Bruch, 1853. *Larus islandicus*, Edmonston, 1822, nec Edm. 1823. *Larus glacialis*, Macgill. 1824; (nec Benick.) *Larus leuceteres*, Schlep. *L. leucopterus*, Vieill. *L. giganteus*, Benick. fide Bp.

Sp. char.—Length 29 inches; extent 62; wing 18.5. Bill above 2.75, along gape 3.75; height at nostril .80, at angle .85. Tarsus 3.00; middle toe and claw 2.75. (Dimensions sufficient to separate it from *leucopterus*, the only other N. A. species in this group, (b.)

Hab.—Arctic seas, coming southward in winter. Labrador in summer.

3. *LARUS LEUCOPTERUS* Faber.

L. argentatus, Sub. 1818; nec Brünn., nec auct. *L. argentatus*, var. Temm. *L. arcticus*, Macgill.; (nec *Leucus arct.* "Macg." Bp. 1856.) *Larus leucopterus*, Faber; (nec Vieill., qui *L. glaucus*, Brünn.) *Laroides leucop.* Bruch, 1855. *Glaucus leucop.* Bruch, 1853. *Leucus leucop.* Bp. 1856. *Plantus leucop.* Reich. *Larus islandicus*, Edmonst. 1823, nec 1822. *Larus glaucoides*, Temm. 1840. *Laroides glaucoides et leucopterus*, Brehm, fide Bp.

[June,

Larus glaucus "Benick" Brehm. *Lehrb. Naturg. Eur. Vog.* 1823 p. 704

"Geland Bourguemestre" Secl.

L. glaucus Latr. p. 814. Brehm. *Lehrb. Nat. Eur. Vog.* 1823 p. 729.

L. cinereus Brisson v. p. 160.

L. glaucus, Aud. Syn. p. 329. Faber. *Prod. Isl. orn.* 1822 p. 98

Larus medius, Brehm. *Lehrb. Naturg. v. Europ.* 1823 p. 731.

L. glaucus, Macg. *Man. orn.* 1842 p. 247. *Gm.* p. 600. *Journ.*

Man. 1820, II p. 757. *Vieill. Fa. Paris.* p. 395. *Ess. ornith.* p. 617.

Bp. Compl. List p. 63. *Schinz. Eur. Nat.* p. 378. *Schleg.* ~~p. 11~~

Geland leucopetere Secl.

L. arcticus Macg. *Mem. Wern. Soc.* v. 268

Sabine. *L. leucopetere* Faber. *Prod.* 1822 p. 91 x Grand p. 197

L. glaucoides Temminck "in Meyer's Züfuss, 3. Taschent. iii,

L. leucopetere, Nauman. *W.D.* p. 367 pl. 265.

Aud. Syn. p. 327

Brehm. Lehrb. Naturg. v. Europ. 1823, p. 735.

Macgill. Man. 1842, II p. 247.

Sp. char.—Length 24 inches, wing 16·75. Bill above 1·80, rectus 2·80, depth at angle ·65. Tarsus and middle toe and claw 2·26.

Hab.—"Arctic seas; Baffin's Bay; Labrador." (Lawr.)

c. Color above pearl blue. Primaries about the color of the back to the very tips, which have well-defined, rounded, white apical spots.

4. *LARUS GLAUCESCENS* Lichtenstein.

Larus glaucescens, Licht. *Laroides glauc.* Bruch, 1855; (nec *Glaucus glaucescens*, Bruch, 1853, qui *Larus chalconotus*.) *Leucus glaucescens*, Bp. 1856. *Larus glaucopterus*, Kittlitz, fide Bruch. *Glaucus glaucopterus*, Bruch, 1853.

Sp. char.—Bill long and rather weak, the upper mandible projecting considerably beyond the lower, the convexity of the culmen comparatively slight. Angle pretty well defined, the outline between it and the tip about straight. Adult: Mantle pearl blue, much the same shade as in *argentatus*. Primaries slightly deeper than the back, all with rounded, well-defined apical spots of white. First, Base not appreciably lighter than the body of the feather, with a well-defined white spot on both webs, near the end, separated from the white apex by a transverse band of the color of the body of the feathers; second, third and fourth, basal portions notably lighter than the terminal, fading into pure white at their junction with the latter, without spots except the apical ones; fifth, sixth, basal portions the color of the back, fading into white near the end, separated from the white apices by a band (narrowest on the sixth) of the color of the outer primaries.

Young of the year.—Bill black. Everywhere deep grayish, somewhat mottled with whitish, the feathers of the back, wings and upper tail coverts edged, tipped and crossed by more or less regular transverse bars of grayish white. Length about 27 inches, wing 16·75. Bill above 2·25, gape 3·25, height at angle ·70; tarsus 2·60, middle toe and claw 2·50.

Habitat.—Pacific coast of North America.

One of the later discoveries, and a very distinct and well-marked species.

5. *LARUS CHALCOPTERUS* Licht.

Glaucus glaucescens, ("Licht."), Bruch, 1853; (nec *Laroides glaucescens*, (Licht.) Bruch, 1855. *Laroides chalconotus*, Bruch, 1855. *Leucus chalconotus*, Bp. 1856. *Larus chalconotus*, Lawr. 1858.

Sp. char.—Adult: "Entirely similar to *leucopterus*, except in the primaries, which are ashy gray, with rounded white apical spots." Young: "Dark gray, as in *glaucopterus*," (of Kittlitz = *glaucescens*, Licht.)

Habitat.—"American coast of Behring's Straits, and Greenland."

A species I have never seen. The diagnosis is copied from Bruch's Monograph. This author, in saying that the primaries of the bird are "ashy gray, with rounded white apical spots," reduces the characters in this respect precisely to those of *glaucescens*, Licht. Then, the bird being "like *leucopterus*, except on the primaries," must be separated from *glaucescens*—throwing out of consideration the primaries, acknowledged to be identical—by those points in which *leucopterus* differs, viz.: smaller size, somewhat differently shaped bill, and lighter mantle. In a word, *chalconotus* is a *leucopterus* with the wings of *glaucescens*.

If the characters given are constant, the species is doubtless a valid one. If so, it is the smaller analogue of *glaucescens*, and bears the same relation to that species that *leucopterus* does to *glauca*.

Section B.—*DOMINICANUS* Bruch. Very large and powerful; color above dark blackish slate; primaries crossed with black near the end.

6. *LARUS MARINUS* Linnæus.

Larus marinus, Linn. 1776. *Dominicanus marinus*, Bruch, 1853 et 1855. 1862.]

Larus naevius, Gmel. 1788 (juv.) *Larus maculatus*, Bodd. fide Bp.; (nec Brünn.) *Larus maximus*, Mülleri, et *Fabricii*, Brehm, secundum Bp.

Sp. char.—First primary with a large white space at the tip, $2\frac{1}{2}$ inches long. Young: Fully as large as the adult; the bill as large, but the angle less developed, entirely black. Upper parts dusky chocolate brown, everywhere mottled with whitish and light rufous, (the latter on the back and wings,) the feathers being tipped and the wing coverts deeply indented with this color. Under parts mottled with white, or rufous white and dusky, the throat mostly immaculate. Primaries and tail deep brownish black, the former at the extreme apex tipped, and the latter tipped, subterminally barred, and with the outer feather mottled with whitish. Length 30 inches, extent 65, wing 18.50.

Habitat.—North Atlantic, coming south in winter. Florida (Aud.)

A full description of the adult appeared unnecessary. That of the young was drawn up from a specimen taken from its nest while in the downy state, and reared by the writer until full grown.

Section C.—*LAROIDES* Brehm. (*Larus*, Kaup; *Glaucus*, p. Bruch, 1853.)

Mantle lighter than in B, darker than in A. Primaries crossed with black near the ends.

a. Large; bill robust; angle prominent. "Herring-gulls."

I. A rounded, white subapical spot on the first primary. Legs flesh-colored

7. *LARUS OCCIDENTALIS* Audubon.

Larus occidentalis, Aud. *Glaucus occid.* Bruch, 1853. *Laroides occid.* Bruch, 1855.

Sp. char.—Bill large, robust, very stout and deep, the culmen very convex at the end, the angle strongly developed, making the under outline doubly concave. Adult: Mantle dark bluish ash, almost slate color, the tips of the secondaries and tertiaries white, the line of demarcation distinct. Primaries: first three black throughout their exposed portions, the outer white for some distance at the tip (1.75 inches), crossed near the end with an irregular black bar; the shafts entirely black; the second without a white spot but its tip and the tips of all the others white. The young of the year: Bill entirely black, rather shorter than in the adult, but at the same time with great comparative depth at the angle. Everywhere a deep blackish brown, mottled with grayish white, the feathers of the upper parts edged and tipped with that color. Rump and upper tail coverts barred with whitish and dusky. Primaries and tail uniform deep blackish brown, with scarcely lighter tips, the former without tips. Length 24 inches, extent 55, wing 15.5. Bill above 2.30, along gape 3.10; height at nostril .75, width .40, height at angle .85. Tarsus 2.75.

Habitat.—Pacific coast of North America.

A very strongly-marked species.

8. *LARUS SMITHSONIANUS* Coues.

Larus argentatus, auctorum americ. *L. argentatus ex America*.

Sp. char.—Adult: Mantle typical "gull-blue;" much lighter than in *occidentalis*, lighter than in *brachyrhynchus*, much as in *Delawarensis* and *glaucescens*, darker than in *glauca* or *leucopterus*. Bases of primaries a but slightly lighter shade of the blue of the back, not so light nor extending so far, (especially on the first primary,) nor so broad at the end as in *Californicus*; on the first the light portion is very short, falling five or six inches short of the white spot, is not lighter at its juncture with the black, nor does it extend further on the central portion than on the edge of the feather; on the second, third and fourth the light bluish extends about the same distance (about four

[June,

- L. marinus*, Linn. Vh. succ. 1746, no 100, reg. p. 100.
 Brunn. orn Bor p. no 145.
 Im: 598, no 6: Lath, 813 no 6.
 Nilsson orn dec. 11 164 p no 214.
 Bewick Brit Bds 11 p. 212,
 Naumann, NVO. p. 438, pl. 268-9.
L. natterii, Gm p. 598 no 5. } DeKay p. 308 pl. cxxix fig 283.
 Faber. Brit Isl. orn 179. } Giraud, B. L. p. 301.
L. niger Briss. VI 1760, p. 158. } Aud. Syn. 1839 p. 329.
 "L. albus, dorsa atro Linn S. N. 6th Ed. sp. 3" (Briss.)
L. maximus, Brehm Lehr. Naturg. Eur Vog. 1828. p. 733.
L. marinus, McGill. Brit Bds V; 2d. Man. Orn. 11 p. 244.
 Meyer and Wolf. Jawsch. 1810, p. 465, ii
 Brunn. 1820 11 p 1760
 Vieillot Ann. Mus. 1818 xx1 p 507. 2d. Fr. Mus. 392
 Less on ornith 1831 p. 617.
 Bp. Comp. List, 1838 p. 63.
 Key S. et. Ples. 1840.
 Schinz. Eur. Fauna 1840 i' p. 379
 Schleg. Rev. vith. 1844

Aud. Synopsis 1839 p. 328

L. argentatus DeKay M. F. p. 306; pl. cxxii fig 270; pl. cxxix
 fig 284; cxxx fig 286
 Aud. Syn. p. 328

inches from the tip of the second), and runs further up along the centres of the feathers than on the edge; on the seventh the black is a mere spot on one or both webs; the bluish fades into pure white at its juncture with the black on all the feathers except the first. First primary with a subapical spot near the tip, small, rounded, not much more than an inch long, not longer on the outer vane than on the inner, sometimes wanting on the former. Second primary without a white spot, or, if present, it is a mere point. Extreme tips of all the primaries white. Young of the year: Entirely a deep sooty brown, the throat slightly streaked and the rump transversely barred with whitish, and the feathers of the upper parts edged with grayish or yellowish. Wings and tail entirely black; bill black. Length 25 inches; extent 58; wing 17.75; tarsus 2.50 to 2.60.

Habitat.—Eastern and Western coasts of North America.

Although it may seem a hazardous undertaking to separate the Herring-gulls of America and Europe, after they have been judged identical by so many authors of repute, I am compelled to do so from a conviction that the differences constantly observable in them are of specific value. Further on it will be attempted to show why they have been confounded.

The comparison of the extensive series of the North American bird has been made with four perfect specimens of *Larus argentatus* from Europe, which, I have every reason to believe, represent typically the characters of that species.

In both birds, the color of the mantle, the color of the bill, the relative proportions of the tarsus and toes, the black on the primaries, the small white apical spots, and their bluish bases do not differ appreciably. The tangible differences are the following:

1st. The whole bird is larger. The difference in the wing in some specimens amounts to nearly two inches, and in none is it less than half an inch.

2d. The bill is larger, longer and more robust. It is especially stouter at the base. The angle is larger, more prominent and bulging; but at the same time it has not so pointed and well defined an apex.

3d. The legs and feet are longer and stouter, perhaps even more so than is proportional to the greater size of the bird. The entire difference in the length of the tarsus and middle toe amounts to but little less than half an inch.

The preceding differences, though marked, I should not consider, in the absence of other distinctive features, as of specific value. The following discrepancies I find it impossible not to regard as conclusive.

4th. In the European bird, when adult, the first primary has a white terminal space just about two inches long. (This is precisely as in *californicus*, the similarity being further heightened by the fact that in young birds there is a narrow transverse bar, which gradually resolves itself into two small spots or scollops, and finally disappears.) The second primary has a rounded white spot about three-fourths of an inch in diameter, invading both vanes, but divided into two by the black shaft. In the American bird the first primary has a rounded white spot (of much the same size and character as that on the second primary of the European bird) entirely distinct and separated from the white apex, which is very small. The second primary has no white sub-terminal spot; or if one is present (which is rarely the case in very old birds) it is exceedingly small.

Now it may be urged, that these differences have been noted, but disregarded as of no value, the nature of the terminal markings on the wings of gulls being considered "notoriously inconstant." There is in the Smithsonian collection perhaps the most extensive series of American Herring gulls ever brought together. In no single specimen of the series have I ever observed the slightest approach to the large white apical space on the first primary which exists in the European bird;—constantly, so far as I have observed. 1862.]

portunities for judging. While the bird is undergoing the changes incident to its arriving at maturity, there are great and indeed endless variations in the precise character of the primaries. All, however, uniformly tend towards the same result; and in fully adult birds *these characters are constant*.

I find no material differences in the character of the extent of the bluish markings of the bases of the primaries.

The above points would seem to be sufficient to establish the position assumed, but there is another argument of a different character which, in connection with the preceding, seems quite conclusive. The Herring Gulls of both continents differ from the *Larus glaucus*, *leucopterus*, etc., in being essentially southern birds. They go north to breed only, returning again as soon as the duties of incubation are concluded, and moreover, do not proceed very far north. The American bird, at least, is found but sparingly, if at all, north of Cape Chidleigh, on the coast of Labrador, and is more numerous somewhat farther south. The *Larus glaucus*, *leucopterus*, *Pagophila eburnea*, etc., are entirely boreal birds, inhabiting the regions about the arctic circle, coming south only when forced to do so by the severity of winter. In view of this fact, it would be improper to presume upon the specific distinction of the two birds, unless very strongly marked and constant characters were found. Reasoning by analogy, it would be natural to suppose that two birds, separated by the breadth of the ocean, might very probably be distinct; and discrepancies which in the case of truly boreal birds would be of little importance, might under other circumstances be of specific value.*

In view of the above facts, I have not hesitated to separate the two birds. If the position assumed should be hereafter substantiated by more extended investigation, it will be interesting as bearing upon the law which regulates the identity or non-identity of birds of the two continents, which does not appear to be as yet thoroughly understood.

With regard to the previous comparisons which have been instituted between the two birds, in which no differences have been discovered. It seems that this might have arisen in two ways. In the first place, authors who were impressed with the differences of the markings of the primary in the same species at different ages, might have considered these differences in the two species as equally accidental, and consequently entirely overlooked them, considering them as of no value whatever. The birds in other respects are so generally similar, that they might readily be thought identical. Again, when we are informed that absolutely no differences could be discovered, is it not very probable that the European bird was compared with Northern white-tipped-primaryed stype, the color of the legs not being apparent in dried skins? For example:—this is certainly the case in the comparison made by Wm. Thompson, Esq. (See "Natural History of Ireland, Birds, vol. iii. page 367, copied from the Proceedings of the Zoological Society of London, for 1835, page 83.) The comparison is here made of "six mature specimens of the Herring-Gull of the north of Ireland" with the description given in the Fauna Boreali-Americana. As Richardson does not particularly mention the character of the bluish markings on the bases of the primaries, and gives the legs as flesh colored, there was no difficulty in referring the European specimens to the description. On account of the difference of size of the subterminal spot on the second primary of the two wings of the same individual, the author infers that "this marking is so inconstant that it should not be relied on as a character." Both spots, however, were present; and I have noticed the same difference in the two wings of *californicus*, and even the presence of a minute white dot on the second primary of one wing of *L. Smithsonianus*, and its absence from that of the other, without considering it as in the least invalidat-

* It is due to Prof. Baird to acknowledge that the theory is not original with myself.

Smithsonian
Merr = gull.

ing the claims of these markings to be considered as of value. The radical difference still exists.

But if then the terminal marking of the primaries of *californicus* are like those of the European *argentatus*, and the two species are nearly identical in size and general robustness, what are the differences between these two species? Briefly as follows: The European *argentatus*, though less robust than the *americanus*, does not exhibit that decided approach to the "flew gull" type indicated in the *californicus* by its greenish legs. Though the terminal markings of the primaries are quite identical, the character of the bluish bases differ decidedly. In *californicus* this color is very light, so much so as to be almost white. It runs up further on the primaries (especially on the first), and with a different pattern, its edge being nearly parallel with the shaft for the greater part of its length, and then turning off suddenly at an angle to the edge. It runs up nearly as far on the edge of the feather as in the middle. Now in the European *argentatus* (and also in *Smithsonianus*,) this color is but little lighter than the mantle; runs an oblique course to the edge of the feather; and goes further up centrally than at the edge of the inner vane, where the terminal blackish descends for a little distance as a narrow margin. Moreover, in *californicus* the line of demarcation of the two colors is very distinct and decided, while in *argentatus*, they are more blended at their union. In discussing this point, the habitat of the *californicus* should not be lost sight of.

With regard to the name by which this species is to be designated:—

So far as I have been able to ascertain, the species has never been designated by any other name than that of *L. argentatus* by American authors, it having been always considered by them as identical with the European species of Brünnich.

The *Laroides americanus*, Brehm, might perhaps be considered to refer to this species. It is, however, evidently quite a different bird. The brief diagnosis of Brehm is as follows: "Unterscheidet sich von *Laroides argentatoides* Brehm durch den etwas kleinern Schnabel und der noch weiter hinten erhöhten Scheitel." Now the *Laroides argentatoides* of Brehm is said by that author, "vor allen vorhergehenden"—*L. major*, *argentatus* and *argenteus*—"an ihrem kleinen Schnabel und äusserst hohen Scheitel zu erkennen." Thus, the *L. americanus* of Brehm is a bird with a much smaller bill even than *L. argentatoides* of that author, and therefore cannot possibly be the species now under consideration, which has a larger bill than *argentatus*, Brünnich. I regard it as not at all impossible that Brehm should have based his species (*americanus*) on a small specimen of *L. californicus*, but his diagnosis is so brief and unsatisfactory that I do not see how the identity of the two names is to be proved positively.

The *Laroides argentatoides*, Brehm, is given by Bonaparte and some other authors as the "*Larus argentatus ex America*," which would make it the bird now under consideration. Brehm's description, however, gives no tangible points of difference, and the measurements indicate a bird rather smaller instead of larger than the *argentatus*, Brünn. The distinctive characters from *argentatus* are summed up as lying in the smaller size, smaller bill and higher forehead;—features quite at variance with those presented by the species now under consideration. Moreover, the expression "sie ist nördlicher unter allen silbermöven," proves decisively the non-identity of the two. I have been unable to find any other name which could by any possibility be referred to this species.

There is, in the collection of the United States Exploring Expedition, (Vincennes and Peacock,) a Gull labelled as having been obtained in Oregon. The specimen presents the characters of the present species typically, agreeing perfectly with eastern skins. This locality I was at first disposed to consider as erroneous, but very recently specimens received from J. Hepburn, Esq., of 1862.]

San Francisco, collected in that immediate vicinity, would seem to demonstrate the existence of the species on the Pacific as well as on the Atlantic coast. The specimens I have compared critically with an eastern series, and have been unable to detect the slightest difference. They appear to be absolutely identical. A circumstance that would seem to confirm the belief that the present species does extend quite across the continent is the fact that there are undoubted specimens in the collections of Messrs. Kennicott and Ross from localities whose general avi-fauna is rather of a western than of an eastern type. Should the existence of this bird on the Pacific slope be satisfactorily demonstrated, its *habitat* may properly be given as the "Continent of North America."

I beg leave to dedicate this species to that Institution whose material for the illustration of North American ornithology, unequalled in richness and extent, has so greatly increased our knowledge in this department of Natural History. And the name seems not inappropriate, for, as there is scarcely a lake or river in North America which does not furnish sustenance to this Gull at some period of its extensive migrations, so there is hardly a locality, however remote or inaccessible, which has not yielded its varied productions to the Smithsonian Institution, until its collections afford every facility for the study of the Natural History of our Continent.

II. A large white apical space on first primary in adult birds. Legs dusky olivaceous, the webs bright chrome.

9. *LARUS CALIFORNICUS* Lawrence.

L. argentatoides, Bp. 1828 et Richardson, 1831; nec Brehm. *L. Californicus*, Lawr. 1854 et 1858. *Laroides Calif.* Bp. 1856.

Sp. char.—Bill moderately stout and strong, the angle well developed; varying considerably in size, larger than in *Delawarensis*, sometimes nearly equalling *argentatus*. Tarsus equal to or slightly longer than the middle toe and claw. Adult: Bill chrome yellow, tinge with greenish, a vermillion spot on the lower mandible at angle; a black spot just above it, forming with another small black spot, sometimes present on the upper mandible, an imperfect band. Legs olivaceous greenish or yellowish, the webs chrome. Mantle pearl blue, much as in *brachyrhynchus*, lighter than in *canus* (Linn.), perhaps a little darker than in *argentatus*. Primaries: bases of all light bluish white, almost white internally, especially on the outer; and of great extent on all the primaries; first with a white space at the end about two inches long, the shaft white along the white portion of the feather; second with a white spot near the end, on the whole of the inner and most of the outer web, divided by the black shaft; tips of all white; black forming merely a narrow subterminal band on the sixth. Tips of inner primaries, of the secondaries and tertiaries, white. Dimensions, (average, for they vary greatly) wing 15.50; bill nearly 2.00; tarsus 2.30. Female smaller.

Habitat.—California; Pacific coast; Arctic America, internally; breeds about Great Slave Lake.

The following is the argument in favor of the synonymy adduced:

In the first place, *argentatoides* of Bonaparte's Synopsis (1828), and of Richardson (1831), are the same bird, since the latter quotes the former as authority for the name, and the diagnosis and descriptions of the two agree perfectly. Now, in the collection there are numerous specimens of the fully adult bird from Arctic America, from localities not far distant from those where Richardson's specimens were procured. These specimens agree precisely with Richardson's descriptions of *argentatoides*,* and correspond very

* If it be objected that the expression "six outer quills crossed by a brownish black bar, which takes in nearly the whole of the first one" is not correct, I refer to several other descriptions of Richardson, (his *canus* and others,) where it is evident that he does





nearly with the measurements.* I think, then, that there can be no reasonable doubt of the propriety of referring the large northern specimens to the *argentatoides* of Richardson and Bonaparte. These same specimens were, immediately upon their reception, referred unhesitatingly to *Californicus* of Lawrence, by both Prof. Baird and myself. We have critically examined them, and find it impossible to distinguish them from undoubted specimens of *Californicus*.

The size is somewhat greater; but not more so than would be expected from the much more northern habitat of the specimens examined; and, moreover, the numerous specimens differ among themselves to a remarkable degree, the smallest of the northern ones not exceeding the largest of the southern. Thus, though a large northern bird and a small southern differ so much that it would seem quite reasonable to separate them, there are found intermediates of every grade of dimensions. The upper parts of the northern bird are, perhaps, a shade lighter than are California specimens; but otherwise, we cannot appreciate the slightest distinctive characters. Now, it is not improbable that there should be in America two species of white-tipped primaries Gulls, the one from Arctic (and Eastern?) America and the other from the Pacific, differing from each other, on an average, in size; but in the absence of tangible characters, I do not venture to separate the two. I therefore, at present, quote "*Larus argentatoides*, Bp. et Rich. nec Brehm" as synonymous with "*Californicus*, Lawr.," leaving it to future investigation to settle the point definitely.

The only discrepancy to be reconciled in the description of Richardson, is the statement "legs flesh-colored." The legs of *Californicus* are of a dusky olivaceous greenish or yellowish, their interdigital membranes bright chrome yellow, with a slight tinge of green. In this respect, as well as in a general less powerful and robust organization, weaker bill, &c., it shows an evident approach to the "Mew-Gulls" (*Delawarensis*, *canus*, &c.), and apparently forms the connecting-link between the powerful Herring-Gulls, with their robust bills and flesh-colored legs, and the group of which *canus* is the type.† But Mr. Lawrence himself, in his description given in the General Report, says also "legs flesh-colored," though the color is given correctly in the Ann. N. Y. Lyc. N. H. The descriptions of both these authors were most probably drawn up from the dried skins, in which, as attested by a large series before me, the legs appear of a dingy undefinable color, which might readily be supposed to be the change produced in drying of the flesh color. My authority for the statement as to the color of the legs, is the labels attached to the specimens, containing the color of bills, eyes, legs, &c., taken from the recent bird before skinning.

The type of *Californicus* has been kindly furnished by Mr. Lawrence for examination. It is moulting, and some of the primaries are not fully grown out. The white apical space on the first primary is interrupted by a narrow transverse bar of black. Another specimen before me is in precisely the same condition. In other skins of the series the black bar is resolved into

not take into special consideration the character of the extent of the bluish white bases of the quills; and since the black nearly occupies the whole of the outer web of the first, he would not have particularly noticed the extent to which the bluish white runs up on the inner vane.

* I am inclined to think that Richardson drew up his measurements and descriptions from the largest as well as the most perfect specimens, since, in several instances, the measurements seem above the average, though not exceeding the dimensions of large individuals.

† Bonaparte (Syn., 1828, 360) says his *argentatoides* is "common near New York and Philadelphia."

‡ This fact is also an argument for the impropriety of separating the two groups generically, as has been done by some authors.

1862.]

two little spots, then into a slight indentation at the edge of the feather, which finally disappears altogether, leaving the apex of the first primary purely and uninterruptedly white for nearly two inches.

Independently of the difference in size, character of bill and color of legs, the present species may readily be distinguished from the American Herring-Gull by the different markings of the primaries, (compare descriptions.)

If it be an error to refer the *argentatoides* of Richardson to the *Californicus*, or, in other words, if there be a true Herring-Gull in the north with flesh-colored legs, I do not know by what characters it could be separated from the true European *argentatus*. (See comparison of *Californicus* and *argentatus*, under head of *L. Smithsonianus*.)

The name *argentatoides* of Bonaparte and Richardson is of course of prior date to *Californicus* of Lawrence. The latter name, however, obtains, of Brehm's having first applied the name *argentatoides* to a variety, perhaps only accidental, of the European *argentatus*, of which it necessarily becomes a synonym.

Brehm's description of his *argentatoides* applies pretty well to *Californicus*, but it is evident that it cannot refer to the latter, for he says of it, that "brutet an der schelve dischen, Norwegischen und Danischen kaste,"—a statement entirely at variance with all that is at present known of the geographical distribution of *Californicus*.

Bonaparte, in his conspectus (1856), under head of *L. argentatoides*, (referring to his Synopsis of 1828,) gives, among other characters, the smaller size, the tarsus only two inches, "*remigibus nigris, apice, primæ latissimo; albis.*" This is precisely the character of *Californicus*. The tarsus of *L. Smithsonianus* is nearly or quite two and a half inches long; that of *L. argentatus* about two and a quarter; while that of *Californicus* is just about two inches.

b. Smaller; bill less robust; angle less prominent; legs dusky bluish green. "Mew-Gulls." (Including *L. canus*, the type of Linnæus' *Larus*.)

10. *LARUS DELAWARENSIS* Ord.

Larus Delawarensis, Ord, 1815; Lawr. 1858, (excl. synonym. aliq.) *L. canus*, Bonap. Syn. 1828; (nec Linn.; nec Richards.; nec Nutt.) *L. zonorhynchus*, Richardson, 1831; Aud. 1842 (excl. synonym.), Bp. 1856 (excl. synonym.) *Glaucus zonorh.* Bruch, 1853. *Gavina zonorh.* 1855.

Sp. char.—Bill encircled with black near the end. Tarsus a fourth longer than the middle toe. Mantle light pearl blue. Spot on the outer primaries small, not larger on the outer than on the inner web. In winter the head and neck spotted (not streaked nor nebulated) with dusky. Length 19.75 inches; extent 48.50; wing 14.75. Bill above 1.70; gape 2.30; tarsus 2.05; toe 1.80.

Habitat.—North America, generally. Puget's Sound. All along the Atlantic coast. Texas and interior.

It is necessary to exclude the synonyms of many of the authors adduced, since most of them quote *canus* and *brachyrhynchus* of Richardson as the young. (See next species.)

11. *LARUS BRACHYRHYNCHUS* Richardson.

?*Larus niveus*, Pall. 1811. *Larus canus*, Richardson, 1831, ad (nec Bp. Syn. 1828; nec Linn. et auct.), Nuttall, 1834. *Larus brachyrhynchus*, Richardson, 1831, juv. *Larus Suckleyi*, Lawrence, 1858. *Rissa (!) septentrionalis*, Lawrence, 1858.

Sp. char.—Bill small, somewhat stout for its length, much shorter than the head or tarsus. Upper mandible straight to the end of the nostrils, moderately convex to the tip, rather more so than in *canus*. Angle comparatively more developed than in *canus*, the lower outline considerably concave posterior to

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L. zosteromyces DeKay, N.Y. J. 1844 p. 306 pl. CXXVII f. 282
H.C. XXX f. 285
Giraud B. L. G. p. 360
Aud. Syn. 1839 p. 327.

it, somewhat so before it. Commissure about straight to near the tip. Tarsus about equal to middle toe and claw. Adult: Bill bluish green, its terminal third bright yellow. Legs and feet dusky bluish green, the webs yellowish. Mantle light grayish blue, or dark pearl blue; a shade lighter than in *canus*, much darker than in *Delawarensis*. Primaries: The bluish gray bases rather lighter than in *canus*, much darker than in *Delawarensis*, but fading into nearly pure white on all but the first, at its juncture with the black portion. These bluish gray bases extend towards the end much further than in *canus*, as far as in *Delawarensis*; and, as in that species, extend on the second, third and fourth feather further along the centre of the feather than on the edges, so that they are bordered for some distance with the black of the terminal portions. The black takes in the outer web of the first primary, and nearly the whole of the inner, but rapidly becomes narrower, till on the sixth it is merely a subterminal transverse bar; the seventh has frequently a spot of black on one or both webs; first, with a large white spot near the end, two inches long, longer on the outer than on the inner web, not divided by the black shaft; the tip of the feather black; second, with a similar spot, but smaller, not longer on the outer than on the inner web, and divided by the black shaft; the extreme tip white, as are the apices of all the others except the first. Dimensions: Length 17.50; extent 40.00; wing 13.75. Bill above 1.40; along gape 2.00; height at nostril and at angle .35; tarsus and middle toe and claw 1.80.

Habitat.—Interior of Arctic America. North Pacific Coast.

I have before me the type specimen of Richardson's *Larus brachyrhynchus*, the original of this description in the Fauna Boreali-Americana, "a female, killed on the 23d of May, 1826, at Great Bear Lake." "Some brown markings on the tertiaries, primary coverts, and bastard wing, with an imperfect subterminal bar on the tail, point it out as a young bird, most probably just commencing its second spring. The rest of its plumage corresponds with that of *L. zonorhynchus*, except that it wants the extreme white tips of the quill feathers." The specimen is labelled "♀, May 23, 1826, Great Bear Lake," and corresponds minutely with the above description. Richardson, however, in drawing up the description from the young bird, fell into the error of giving "*remigibus apice concoloribus*," whereas, in the adults, the primaries are as broadly tipped with white as in *Delawarensis* or *canus*. In the type the bill is very short, perhaps less than in the average of even young birds; but there are specimens before me in which it is quite as short.

A very careful comparison of the types of *Larus Suckleyi* and *Rissa septentrionalis* with the above specimen, and with the very extensive series of all ages in the collection, shows them to be absolutely identical, and proves that the three names refer to one and the same species.

The rather intricate discussion of the relationships of *Larus niveus*, Pallas, is presented elsewhere. The amount of the other synonyms may be stated in a word. There are in North America two species of "Mew-Gulls." One is the *Delawarensis*, Ord., *zonorhynchus*, Richd. The other is a bird, the adult of which Richardson mistook for the European *canus*, Linn. and so named it. the young of which he characterized as *L. brachyrhynchus*. The error of authors is in not recognizing two species, but considering *canus*, Rich., and *brachyrhynchus*, Rich., as intermediate ages, or varieties of *zonorhynchus*, Rich. As the name of *canus* is pre-occupied, *brachyrhynchus*, though based upon the young bird, must stand for the North American species.

Comparison of L. canus, Linn., of Europe, and *L. brachyrhynchus*, Rich., of America.—Common characters: Small weak bills, without strongly developed angle, or black band; color of back nearly the same, subterminal and apical spots of primaries identical. Distinctive characters: *brachyrhynchus* has the bill shorter and smaller, culmen more convex at the end, the angle perhaps comparatively more developed. Size is less, gull blue, a little 1862.]

lighter. Bases of primaries very different, the blue is much lighter, fades into nearly white at its juncture with the black; extends for a greater distance, and runs up further in the centre than along the edges of the inner vane; tarsus about equal to the middle toe and claw, while in *canus* the tarsus is a fourth longer, as in *Delawarensis*. The collections of Messrs. Kennicott and Ross would seem to indicate that this gull is extremely abundant in the interior of Arctic America.

Genus II. *BLASIPUS* Bonaparte.

Blasipus, Bp., 1852, fide Lawr. Bp., 1856, type *Larus Heermani*, Cass.
Adelarus, Bruch, 1853. Id., 1855, p.

12. *BLASIPUS HEERMANI*, Bon. ex Cass.

? *Larus Belcheri*, Vig., 1829. ? *Lencophacus Belcheri*, Bp., 1856; (nec "*Adelarus Belcheri*, Vig.; *fuliginosus* Gould" Bruch, 1853 et 1855).
Larus Heermani, Cass., 1852. *Blasipus Heerm.*, Bp., 1856; Lawr., 1858.
Adelarus Heerm. Bruch, 1853, et 1855, excl. synonym.

Sp. Char.—Bill bright vermillion, black from angle to tip. Head all round white, gradually merging on the neck to a plumbeous ash, which extends over the whole under parts (considerably lighter on the abdomen and under tail coverts,) and also on the rump, but which on the back and wings deepens into a plumbeous slate color. Tips of secondaries and tertiaries broadly white. Primaries black, the tips of all but the three outer ones white. Tail black, narrowly tipped with white. "Length about 17.50 inches; wings 13.50; tail 5.50."

Habitat.—Pacific Coast of North America; Puget's Sound; California; Mazatlan, Mex.

Genus III. *RISSA* Leach.

Larus, Linnæus, 1758, (nec 1744, nec 1735, fide Gray.)

Gavia, Boie, 1822, (nec Moehr. 1752.)

Rissa, Leach, 1825, (typus *Larus rissa*, Brünn.)

Cheimonea, Kaup, 1829, (typus idem.)

Pulocondora Reichenbach, fide Bp.

13. *RISSA TRIDACTYLA* Bon. ex Linn.

Larus rissa Brünn, 1764. *L. tridactylus* et *rissa*, Linn. 1766. *L. torquatus*,

L. gavia, et *L. canus*, Pall., 1811. *Rissa Brünnichii*, Leach, 1825.

R. cinerea, Eyton. *R. tridactyla*, Bon., 1838, et auct. *Gavia tridactyla*, Boie, 1822. *Cheimonea tridactyla*, Kaup, 1829.

Sp. Char.—Bill rather longer than the tarsus, nearly equal to the middle toe without the claw, stout at the base, tapering somewhat towards the tip, which is rather acute and attenuated. Convexity of culmen regular and gradual. Angle at symphysis very moderately developed. Color of bill light yellow, clouded with olivaceous. Head and neck all round, under parts and tail pure white. Mantle rather dark bluish or cinereous gray, the tertiaries and secondaries of the same color nearly to their tips, which are white. Primaries: the first very light bluish white, without white apex, its outer web and its inner web for about two inches from the tip black; second like the first, but without the black outer web, its tip being black for nearly the same distance as the first, its apex with a minute white spot; on the third and fourth the black tips grow shorter, while the apices are more broadly white; this lessening of the black on each feather is exactly proportional to the shortening of the successive quills, causing the bases of all the black tips to be in the same straight line. A subapical black spot is usually present on one or both webs, but is sometimes absent. Legs and feet dusky olive. Young: Bill black. An anteocular lunula, and a postocular spot, dusky

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Soeland ou Monette tridactyle DeGland.

Larus hybernus Klein aves p. 138, no 9 (r3. rrs)

Gavia hyberna, Bris. orn. 1760. VI p. 189.

L. tridactylus Lath. II p. 817 no 17, Gm. h. 595 no 2.

Relg. Fn. Suc. p. 154, no 115

Mess. orn do II p. 174 no 219

Naum. N. V. II, p. 322 pl. 262.

Larus Rissa Gm. p. 594, no. 1

" Rissa " p. 594. Lesson, orn. p. 619.

Monette ardele tachetée, Bris. x. I p. 185 no 99 pl. 17 fig 2.

L. tridactylus. Pennet. Brit. Bds. II p. 229.

and. Syn. p. 326

Fabr. Pont. Isl. orn

Larus naevius. Schaeffer, 1779, p. 64 pl. XL.

L. tridactylus do do do pl. I

Larus do DeKay. Voy. 7, 1844, p. 313, pl.

Richardson F. B. as II 1831 p. 423.

Rissa tridactylus Bp. Comp. Lath. 1838 p. 62

L. tridactylus Rehm. Zeits. Naturg. Eur. Vol. 1823 p. 705.

820 p. 774 Vieill. Det. 1818, xxi p. 503; Fn. Franç. 1823, 39. Schinz

Eur. Fn. p. 385

slate. A broad transverse bar across the neck behind, the whole of the lesser and median wing coverts, the bastard quills, the tertiaries, except at their edges, and a terminal bar on the tail, black. The four outer primaries with their outer webs, outer half of inner webs, and tips for some distance black, the rest of the feather pearly white. Tips only of the fifth and sixth black, their extreme apices with a white speck. Dimensions: Wing 12.25. Bill above 1.40 to 1.50, height at base .59, at angle .40; tarsus 1.30 middle toe, and claw 1.80.

Habitat.—Arctic regions of both hemispheres, coming south in winter.

A specimen has the circumrostral space as far back as the eyes a light brownish ashy, in marked contrast to the adjoining white. The bill is stouter than usual, and of a bright chrome.

A comparison of this species with the succeeding will be found under the head of the latter.

14. *RISSA KOTZEBUI* BON.

?*R. brachyrhyncha*, Bruch, 1853, nec *Larus brachyrh.* Gould. *R. nivea* Bruch, 1855, excl. synonym. *R. Kotzebui*, Bp., 1856. *R. brevirostris*, "Brandt," Lawrence, partim, sed nec Brandt, quæ potius species sequens.

Sp. Char.—Nearly adult. Bill rather long, and somewhat tapering towards the tip, which is attenuated and decurved; stout at the base, where it is much deeper than at the angle; culmen about straight to the nostrils, the convexity beyond them to the tip very gradual and rather slight; gonys doubly slightly concave, the angle but little developed, so as to hardly touch a chord drawn from the tip of the lower mandible to the base; but its apex acute. Bill light yellow, slightly tinged with olivaceous, its tip somewhat clouded with dusky. The specimen described, as being not fully mature, has a post-ocular spot, and the nape plumbeous gray, which color on the back of the neck fades into the pure white which intervenes between it and the mantle. Mantle gray-blue, with a leaden tinge, but several shades lighter than in *brachyrhynchus*. This color extends nearly to the tips of the tertiaries, but hardly at all invades the secondaries, which are pearly white for nearly the whole length. Primaries: The shafts of all black, deepest on the outer ones; the first blackish-brown, its inner web dull white at the base, this white narrowing as it ascends till it is lost an inch or two from the tip of the feather; there is no distinct line of demarcation between the two colors; second the color of the first, but the white broader, better defined, and ending abruptly one and a half inches from the tip; third and fourth with the white still wider defined, and running up rather further on the feather; fifth bluish white, with a brownish black tip, half an inch long and a central field of dusky along the shaft; other primaries a lighter shade of the color of the back, fading into white on the edges, without any black. An imperfect subterminal bar on the tail, and dusky tips along the median wing coverts, show the specimen to be immature. Tarsus shorter than the middle toe without the claw; the hind toe better formed than in *R. tridactyla*. Legs and feet dusky-olivaceous. (No. 21,287, S. I. Coll., from Semivine Straits.)

Another specimen (No. 15,695, from the N. W. coast of America) differs in the following particulars:

The bill, though stout at the base, is more tapering and attenuated at the tip, which is more decurved; and the convexity of the culmen is more gradual, giving a somewhat different shape. The back is a rather darker shade of leaden gray, approximating to *R. brachyrhyncha*. The white of the inner vanes of the outer primaries is broader, purer and more sharply defined. It agrees precisely in other particulars, the hind toe having the same development. Dimensions (of No. 21,287): Bill along culmen 1.50 inches; from apex of angle to

tip of lower mandible .48; from nostrils to tip of upper mandible .72; depth at base .55, at angle .42; width at base .33. Wing just 12 inches; tarsus 1.35; toe and claw 1.90. Of No. 15,695, the same parts measure respectively, 1.68, .56, .90, .54, .40, .40; wing, tarsus and toe about the same.

Habitat.—Northwest coast of America.

This species differs from the *R. tridactyla* chiefly in the shape of the bill and in the greater development of the hind toe. Its habitat is also quite different, and I have not the slightest doubt of the propriety of separating that species. From the *R. brachyrhyncha*, Gould, of which I have before me typical specimens, fully mature and in excellent preservation, it is totally distinct, the characters differing in almost every respect. The size, shape and color of the bill, the color of the mantle, the color of the feet and the markings of the primaries are widely diverse in the two birds. It is unnecessary here to specify these differences, as they may be seen by comparing the descriptions given.

While the characters of the species are thus so very distinct and well marked, its synonymy is in a state of confusion only equalled, perhaps, by that of the succeeding species; and the proper name to be applied to it is a matter of great uncertainty. The history of its synonyms is so intimately blended with that of *Rissa brachyrhyncha*, that the two may be most conveniently discussed together. The reasons for the adoption of the name which I chose for this species may, however, be given here. The essential character of Bonaparte's *R. Kotzebui* is "simillima præcedenti;" *R. tridactyla*, "sed halluce magis ex plicato." The character of the hind toe is precisely the distinctive feature of the specimen now under consideration. Still there are some discrepancies in Bonaparte's description. The wings of the young birds before me are not "black internally;" the bill is not "very black," nor is the back "remarkably variegated with black and white." Still, in a more immature state of plumage than that exhibited by the specimens before me, these characters may exist; and therefore, in spite of these discrepancies, I think it advisable to adopt the name, especially as the imposition of a new one, otherwise unavoidable, is thereby obviated. It is well known that at certain ages the *R. tridactyla* assumes exactly the state of plumage described by Bonaparte; and reasoning by analogy, in view of the close relationship of the two, it might be expected that the same should occur in the present species.

15. *RISSA BRACHYRHYNCHA* (Gould.)

Larus brachyrhynchus, Gould, P. Z. S. 1843. *Rissa nivea*, Gr. secundum Bp.; (nec *L. niveus*, Pall. *Rissa brevirostris*, Brandt, secundum Bp. *Rissa nivea*, "Bruch," Lawrence, (1858,) Gen. Rep. 855; sed nec Bruchii, quæ species præcedens. Descriptio Gouldii ipsius transcripta est.

Sp. char.—Adult: Bill a uniform clear light straw yellow, without any olivaceous tinge; very short, stout, wide at the base, upper mandible much curved, though not acute nor attenuated; the convexity of the culmen very great, especially towards the tip, it being, from the nostrils to the tip, almost the arc of a circle, whose centre is the apex of the angle at the symphysis; gonys but very slightly doubly concave, its angle but little developed. Tarsus not much more than two-thirds the middle toe and claw. Wings exceedingly long, reaching much beyond the tail. Head and neck all round, under parts and tail pure white. Mantle deep leaden gray, much darker than in the preceding; and this color extending to within half an inch of the tips of the secondaries and tertials, which are white. Primaries: First primary with its shaft and outer vane black, its inner vane with a space of dull gray (not white), which, at the base, takes in nearly all the vane, but gradually narrows, and, at about two and a half inches from the tip, ends by a well-defined rounded termination about half as broad as the vane itself; second, the outer vane is of the same leaden gray to within four inches of the tip; the inner

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vane wholly of a lighter shade of the same color to within three inches; this gray ends very abruptly, being almost truncated, as it were; third, like the second, but the gray extends further (nearly as far on the outer as on the inner web), to within about two inches of the tip, which has a minute gray apical spot; fourth, wholly leaden gray to within one and a half inches of the tip, which has a larger apical spot than the second; fifth, the leaden gray body of the feathers is separated from the well-defined and now white apex by a band of black, less than an inch long; and the gray begins to be edged internally with white; sixth, gray, fading into white at the tip and internal border, with a small subapical spot of black on one or both webs; other primaries like the sixth, without any black. This "gray" of the primaries is precisely the color of the mantle. Legs and feet in the dried specimen light straw yellow; probably tinged with coral red in life. Claws black. Dimensions: Bill along culmen 1.19 inches; depth at base .50; width .42; depth at angle same; nostril to tip .60. Wing 13.00; tarsus 1.25; middle toe and claw 1.95. (No. 24,296, S. I. Coll. from Kamtschatka.)

Habitat.—Kamtschatka.

This is a very strongly-marked species, and one which it is impossible to confound with any other. The fine specimens before me agree in the minutest particulars with Gould's description. Its peculiar characters of the shape of the bill, its color and that of the feet, with the dark mantle and the peculiar style of the markings of the primaries, separate it widely from any other Gull with which I am acquainted. Having never seen the young bird, I am totally unacquainted with the changes of plumage which the species undergoes.

Having thus characterized the two species of *Rissa* from the Northwest coast, I proceed to the difficult task of discussing their intricate synonyms. While it is believed that the characters of the species are accurately given, the hope is scarcely indulged that the synonyms are more correctly assigned than they have hitherto been by previous authors.

Concerning the proper location of no name has there been a greater difference of opinion among authors than of *Larus niveus* of Pallas? Many writers consider it a *Rissa*, and refer it to the *R. brachyrhyncha* of Gould. Bonaparte considers it a true *Larus*, and makes it a distinct species. I am decidedly of opinion that it is a true *Larus*, and very closely allied to, if, indeed, not identical with, the *Larus brachyrhynchus*, Richardson, of this paper. Let us examine the characters given by Pallas. "Rostrum virescente-flavum." There is no trace of greenish in the bill of *Rissa brachyrhyncha*, which is a clear straw yellow. "Pedes fusc." The feet of *Rissa brachyrhyncha* are yellow, with a tinge of coral red. With his known accuracy of description, Pallas could hardly have made such a mistake as this; and hence, I do not see why Bruch has identified the bird with *Rissa brachyrhyncha*. In Pallas' description thus far, there is nothing absolutely inconsistent with the characters of *C. Kotzebui* of this paper. The description continues, however, "apice alærum nigro præcedenti similimus." The preceding species is *L. cachinnans*, Pall., the description of the primaries of which is, "remiges 1 ad 6 extremitate nigræ, extimæ sensim ulterius; duæ extimæ macula transversa alba et apice, 3 ad 6 tantum apice albæ." This is the usual pattern of coloration of the primaries of Herring-Gulls, and very different from that which obtains throughout the genus *Rissa*, being equally inapplicable to either species of the genus. It is true that the plate gives no indication of these subapical spots on the primaries; but in the case of conflict, the text should certainly have precedence. Is the bird, then, a *Rissa*? If we examine Pallas' descriptions of his *Larus rissa*, *L. torquatus*, or *L. gavia*, we find that he is very careful to use the expressions "tridactylus" and "subtridactylus," and it seems hardly probable that the rudimental character of the hind toe would have passed unnoticed. The plate shows the hind toe and claw as fully formed as many species of *Larus*, and there is no expression in the text contradicting it. While I am thus of opinion that the

bird is a *Larus*, I by no means insist upon its reference to *L. brachyrhynchus*, Rich, although I have placed it as a synonym of that species, with a query, in consequence of my inability to discover any material discrepancies. The question appears really to hinge upon the identity or non-identity of *Larus brachyrhynchus* with the Siberian type of *L. canus*, which is given by Midden-dorff as a variety (*major*) of *canus*, in view of its larger bill and some other peculiarities. I have little doubt of the propriety of referring *L. niveus* to this Siberian Mew-Gull.

But, while I thus exclude *Larus niveus* of Pallas from the *Rissa*, the *Rissa nivea* of Bruch and other authors is to be examined. Bruch says of his *R. nivea* of 1855, that it has the hind toe better developed; and it is of another species that he says "feet coral-red." While, therefore, he is in error in adducing *R. brachyrhyncha*, Gould, as a synonym, his species is to be referred (from its description) to the preceding species,—*R. Kotzebui*.

I quote *Rissa nivea*, Gr. and *Rissa brevirostris*, Brandt, as synonyms of the species, on the authority of Bonaparte.

In the General Report on Birds, Mr. Lawrence gives, under the head of *Rissa brevirostris*, Brandt, a description taken from Bruch, which applies to the preceding species in most particulars, but the expression, "feet coral-red," is only applicable to the present. Again, under head of *Rissa nivea*, Bruch, which has been shown above to be the *Kotzebui*, he copies Gould's description of *R. brachyrhyncha*. In other words, in his first species he has the synonymy of the present and mostly the description of the preceding species; and his second, the description of the present species and mostly the synonymy of the preceding. *Rissa septentrionalis* of Lawrence has been already adverted to.

I am entirely ignorant of the characters and relationships of *Larus citrirostris*, Schimper. By Bonaparte it is placed as a synonym of *Rissa brachyrhyncha*; this author, perhaps, having overlooked the fact that he had already assigned it, a few pages previously, to *L. niveus*, Pallas. Judging, however, from Bruch's description and plate, it must be quite distinct from the present species, as the bills differ widely in shape. Bruch says that Bonaparte's *L. kamtschatchensis* is an "undoubted synonym" of *Larus citrirostris*. Bonaparte himself places *L. kamtschatchensis* as a partial synonym of *L. niveus*, Pall. It is not impossible, after all, that *L. niveus* should be distinct from the Mew-Gulls (*Larus canus major*, Midd. and *L. brachyrhynchus*, Rich.) both of Siberia and America, and yet be no *Rissa*, but form a good species, with *Larus kamtschatchensis*, Bp. and *L. citrirostris*, Schimper, as synonyms. This is the opinion maintained by Bonaparte.

In the preceding remarks I have endeavored to state the opinions of various writers and my own, as fairly as possible; considering that in this manner truth is most likely to be attained. I do not profess to have settled so knotty a point satisfactorily, even to myself; and, accordingly, am prepared to adopt any modifications of the views here expressed which future investigations may require.

Genus IV. PAGOPHILA Kaup.

Gavia, Boie, 1822; (nec Moehr. 1752.)

Pagophila, Kaup, 1829, (typus *Larus eburneus*.)

Cetosparactes, Macgill. 1842, (typus idem.)

16. PAGOPHILA EBURNEA Kaup ex Gmel.

Larus eburneus, Gmel. 1788. *Gavia eburnea*, Boie, 1822. *Pagophila eburnea*, Kaup, 1829; Lawr. 1858. *Cetosparactes eburnea*, Macgill. 1842. *Larus candidus*, Fabricius, 1780. *Larus niveus*, Mart. fide Bp.; (nec Pall. 1811.)

Sp. char.—Culmen straight to the nostrils, then regularly convex; commissure gently curved to the tip, where it is greatly decurved; gonys straight to

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"Galland Loutour" Vogl.

Larus Eburneus Key. & Blas. 1840 Schlegel Vol. 1 p. 384,
Schlegel. 1844.

Larus Eburneus, Gm. 596 no 14, - Lath p. 816 no 10.

~~Miller~~ Gm. Lath.

~~Miller~~ p. 171 Vol. II no 277.

Naum. M.V.O. 1840 p. 341, ~~pl~~ 263.

undulatus Synopses 1839 p. 326, 1848 p. 389.

Viell. Dict. 1818, t. XXI p. 494, Viell. M. Franc. 1828 p. 389.

Gsmm. man. 1820 p. 769, Latham. ornith. p. 168 (pl. I, fig. 4)

"Larus niveus Martens, Kiese n. Spitz B. p. 77, (Naum)

Larus Eburneus Phipps " " Nordfol. p. 187.

Larus canidus, Fabricius, Faun. Gronov. p. 103, no 67.

Larus albus Schaffer, Mus. ornith. 1779 p. 65; plate X+11

Celostor actus Eburnus, Mayall. Brit. Bor. n. 2d man. p. 252.

Gavia Eburnea Bp. Amph. Lit. 1839 p. 62.

Larus atricilla Linn. S.N. Ed XII, 1766 1. p. 225. 7m. p. 600. ² Luteo.
Gavia Redibunda Bris. VI p. 192 pi. 18 figs.
L. atricilla McKay M.F. 7, 1844 p. 310, pl. cxxxii, figs 289-90. pl. cxxxv. p. 296
ords Ed Wilson, p. 257.
Pap. Obs Wilson p. 246.
Sp. Ann. M.F. 4th vol. 1/1 p. 359.
Giraud. p. 358.
uncl. Synp. 324

near the angle, which is well developed, the outline from angle to tip perfectly straight. Feathers extending between the rami nearly to the angle. Wings long and pointed, reaching beyond the tail; primaries gradually attenuated to the tip. Adult: Entirely pure white, the shafts of the primaries straw yellow. Bill dusky greenish yellow at tip, and along the cutting edges. Legs and feet black. Length 19.50 inches; wing 13.25; bill above 1.40, along gape 2.10, height at nostrils .45; tarsus about 1.45 (varying); middle toe and claw 1.75.

Habitat.—Northern coasts of both continents.

17. *PAGOPHILA BRACHYTARSUS* Bruch ex Hölb.

Larus brachytarsus, Hölb. 1846. *Pagophila brach.* Bruch, 1855. *P. brachytarsi*, Lawr. 1858. *Larus niveus*, Brehm, fide Bp.; (nec Pall. 1811.) *Pagophila niveus*, Bp. 1856.

Sp. char.—"Bill yellow, with a darker tip. The long wings, which when folded reach two and a half inches beyond the tail, are distinguished from those of all other Gulls by the extraordinary breadth of the four first primaries. Color snow-white, with or without dark brown spots. Feet and webs black, the latter very deeply excised. Length 17 inches; extent 40; tail 5; tarsus one inch; middle toe 1.75. Breadth of outer primary four inches from tip 1.23."

Habitat.—"Greenland."

Never having seen a specimen of this supposed species, I have nothing to offer with regard to its relationships to the *P. eburnea*. The description is compiled from Holböll's original account.

Genus V. *CHROICOCEPHALUS* Eyton.

Xema, Boie, 1822; (nec Leach, 1818.)

Gavia, Kaup, 1829; (typus *L. ridibundus*; nec Moehr. 1752.)

Ichthyæetus, Kaup, 1829; (t. *L. ichthyæetus*, Pall.)

Hydrocoloeus, Kaup, 1829; (t. *L. minutus*, Pall.)

Chroicocephalus, Eyton, 1836; (t. *L. capistratus*, Temm. fide Gray.)

Gavia, Macgill. 1842, p. (Nec Moehr. 1752.)

Atricilla, Bonap. 1854; (t. *Atricilla Catesbyi*, Bp.)

Cirrhocephalus, Bruch, 1855; (t. *L. cirrhocephalus*, Vieill.)

A.—Large; bill rather stout, tip much decurved; middle toe and claw three-fourths the tarsus.

18. *CHROICOCEPHALUS ATRICILLA* Lawr. ex Linn.

Larus atricilla, Linn. 1766. *L. ridibundus*, Wils.; (nec Linn.) *L. major*, Catesb. *Atricilla Catesbyi*, Bonap. (fide Bruch.) *Chroico. atricilla*, Lawr. 1858.

Sp. char.—Bill deep carmine. Hood deep plumbeous, grayish black, extending further on the throat than on the nape. Eyelids white posteriorly. Mantle grayish plumbeous. Length 16.50 inches; wing 13; bill above 1.75; tarsus 2.00; middle toe and claw 1.50.

Habitat.—More southern portions of Atlantic coast of North America. Texas.

B.—Medium; tarsus equal to the middle toe and claw.

19. *CHROICOCEPHALUS CUCULLATUS* Bruch ex Licht.

Larus pipixcan, Wagler. *L. melanorhynchus*, Temm. fide Bruch. *Chroicocephalus cucullatus*, Bruch, 1855; Lawr. 1858.

Sp. char.—Bill very short, scarcely more than two-thirds the head, about three-fourths the tarsus, moderately stout, the culmen regularly curved from base to tip; angle well defined and very prominent. Adult: hood deep plumbeous black, barely encircling the head, not extending further on the throat than on the nape. Lower eyelid white, upper more broadly so, the white extending behind the eye. Mantle bluish plumbeous, as in *Franklinii*, with more blue than in *atricilla*. Primaries: Shafts of three outer black, of the inner 1862.]

light colored; first, outer web wholly black, inner a rather lighter ashy than the black to within about three inches from the tip; second, like the first, but the base of the outer web the color of the inner; on the third, fourth and fifth the black gradually decreases in extent, till on the sixth it is merely a narrow, subterminal bar; the tips of all are white, smallest on the first, increasing successively on the others. Three lateral tail-feathers white, the others light pearl blue, deepest on the central. Bill deep carmine, crossed with black near the end, the extreme tip yellowish. Legs and feet red. Wing 11.25; bill above 1.20; along gape 1.70; tarsus or middle toe and claw 1.50.

Habitat.—Central America; Panama, (Suckley); Louisiana, (Wurde mann.)

Closely allied to *Ch. Franklinii* and much resembling it. Easily to be distinguished by the characters of the primaries, as will be seen by comparing the descriptions given.

20. CHROICOCEPHALUS FRANKLINII Bruch ex Richardson.

Larus Franklinii, Richard. 1831. *Chroicocephalus Franklinii*, Bruch, 1855.

Sp. Char.—Bill comparatively longer and slenderer than in *cucullatus*, the tip more attenuated and decurved. The angle well-defined and acute; but the depression of the tip makes it less prominent, gonyes from angle to tip concave. Adult: Mouth and bill bright carmine, the latter crossed with black near the end. Feet dusky carmine. Edges of eyelids orange. A conspicuous white patch above and below the eye, and behind it. Hood deep plumbeous black, encircling the upper part of the neck as well as the head, and extending much further on the throat than nape. Mantle as in *cucullatus*. Primaries: Shaft of first white, of others white except along the black portions of the feathers; first, its outer web black to within an inch of the end, its inner pearly white, crossed by a black bar near the end, the tip white for almost an inch; next five crossed by a black bar near the end, two inches wide near the end, gradually narrowing to a black spot on the sixth; bases of all the color of the back fading into white along the outer edge of the inner vane and adjoining black portions; tips of all white. Tail feathers as in *cucullatus*. Length 14 inches, extent 35, wing 11.25. Bill above 1.25, gape 1.75, tarsus or middle toe and claw 1.60.

Habitat.—Interior of Arctic America; Nebraska; Texas; Mexico.

21. CHROICOCEPHALUS PHILADELPHIA Lawrence ex Ord.

Sterna Philadelphia, Ord, 1815. *Chroicocephalus Philada.*, Lawrence, 1858.

Larus capistratus, Bonap., 1828. *L. Bonapartei*, Richardson, 1831.

Chroicocephalus Bonapartei, Bruch, 1855.

Sp. Char.—Bill shorter than the head or tarsus, much compressed, slender, and sternine. Both mandibles with a slight but distinct notch near the tip. Nostrils linear, exceedingly narrow. Adult: Bill black; mouth carmine; legs and feet chrome, tinged with vermilion. Webs bright coral red. Hood plumbeous slate, not so deep as in *Franklinii*, enveloping the head and upper part of the neck, reaching further before than behind. White patches on eyelids narrow. Mantle pearl blue, much lighter than in *Franklinii* or *cucullatus*, not so light as in *minutus*. Ends of the tertials and scapulars scarcely lighter than the back. Primaries: Shafts of the first five or six white except at their extreme tips, the others dark colored; first, outer web and extreme tip black, rest white; second, white, its tips black for a greater distance than the first, and on one or both webs, for a greater or less distance (sometimes half way down the feather) narrowly bordered with black; third, fourth, fifth, sixth, black at the ends for about the same distance on each, the black bordering the inner web much further than the outer; the inner webs of the third and fourth, and both webs of the fifth and sixth, of a rather lighter shade of the color of the back. Other primaries like the back, the seventh and eighth with a touch of black on one or both webs. Length 14 inches, extent 32, wing 10.25. Bill above 1.20, gape 1.75, tarsus or middle toe and claw 1.40.

Habitat.—Entire continent of North America.

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L. franklini and syn. p. 825

Xema Bonapartii Bp. Comp. dict. 1838 p. 62.
do do Giraud, B. L. D. 184 - p. 23-9
Larus Bonapartii DeKay. *Trans.* 1844 p. 311 pl. CXXXI fig 287.
And syn p. 323.
Thompson. *Am. Mag. Nat. Hist.* 1848 p. 192
Wedgland, 17 p. 326

"*Goeland pygmaea*" Leegl.

Xema minutum Bp. 1838 p. 62

[22] *L. minutum*, Pall. "Iter," Reise. Provinz Russ. III p. 702.
Humm. 1840 p. 242 pl. 288

"Oedmann, Nov. Act. Schetch. 1783 II p. 120; no. 1; Humm.

L. Minula, Gm. 1788, p. 595

Lath. Ind orn. p. 11. p. 813.

Milsson. Orn. Suec. II, 179;

"*Larus atricilloides*, Falc. III p. 355, pl. 24. (Humm arm)

do do Gm. p. 601 no. 19

Lath. p. 813 no. 3.

L. Minutus Eyton, Har. Brit. Pet. 1836, p. 61. Humm. 1820, II p. 787.
Brehm, Lehr. Naturg. Eur. Vog. 1823 p. 726.
Meyer & Wolf. 1811 ff p. 488. Schleg. Rev. p. 128

Larus Rossii Aud. Syn. p. 823

degl. p. 330

Larus roseus Macgill 1824.

do do *Jardin* & Selby, Illust. Brit. orn. Vol 1. pl. 14.

Larus Rossii Richardson, Zpp. Parry's 2nd Voyage p. 359.

Rossia Rosen Schleg. Rev. ent. vis. Er. 1844 p. 128. degl. 1849 II p. 332

Rhodostethia rosea Bp. 1838, p. 62

Rhodostethus Rossii, Macgill in Ann. Orn. II 1872, 253.

Larus sabini J. Sab. Linn. Trans. 1818, XII, p. 520 pl. 29.

Xema Sabini Leach. Ross' Voyage App.

Larus Sabini, McKay, Wp. 7. 1844 p. 312, pl. CXXVIII, fig 28/

Gerv. B. L. G. 18. p. 362.

and Gm. p. 323

Xema Sabini Brehm Lehr. Naturg. Vog. Europ. 1823, p. 699.

Larus Sabini, Keys. Blas. p. 95. Humm. Man. 1840 IV p. 488.

Schleg. Eur. Th. 1840 I p. 380 Schleg. Rev. 1844, No 128.

degl. 1849, II p. 332.

Does the female of this species have a brown head? I am inclined to the contrary opinion. If Audubon's assertion to the fact of having seen Gulls with brown heads be true, they were probably of a different species.

[All the preceding species of *Chroicocephalus* acquire during the breeding season, a beautiful delicate rosy blush on the white of the under parts.]

C.—Very small; bill exceedingly slender and compressed; tarsus shorter than the middle toe and claw.

22. *CHROICOCEPHALUS MINUTUS* Bruch ex Gmel.

Larus, minutus, Gmel. 1788. *Hydrocoloeus minutus*, Kaup, 1829. *Xema minutum*, Bp. 1838. *Gavia minuta*, Macgill. 1842. *Chroicocephalus minutus*, Bruch, 1855. *Larus melanotis*, Lesson, fide Bruch.

Sp. Char.—Smallest of the genus. Length 11.50. Bill above .90, along gape 1.40; tarsus, .90, middle toe and claw 1.10. Under surface of wings deep blackish slate.

Habitat.—Europe. ? Northern North America (accidental.)

Professor Baird thinks that there is no good reason to consider this bird an inhabitant of or even a visitor to North America. It has been included in our fauna on the strength of a statement of Sabine, who saw a small Gull, with black head and bill, greatly resembling the *Larus minutus*. This, however, was before *Larus Bonapartei* (*Chroicocephalus Philadelphia*) was described and made known by Richardson in the F. B. A., and a poorly preserved or immature specimen might easily be referred to *Larus minutus* by one ignorant of the existence of two species.

Genus VI. *RHODOSTETHIA* Macgill.

Rossia, Bp. 1838; (nec Owen.)

Rhodostethia, Macgill. 1842; (t. *Larus roseus* Macgill.)

23. *RHODOSTETHIA ROSEA* Bp. ex Macgill.

Larus roseus, Macgill. 1824; descriptio nulla. *Rhodostethia rosea*, Bp. *Rossia rosea*, Bp. 1837. *Larus Rossii*, Richardson, 1825; descriptio hujus avis prima. *Rhodostethia Rossii*, Macgill. 1842.

Sp. Char.—"Scapulars, inter-scapulars, and both surfaces of the wings clear pearl gray; outer web of the first quill blackish brown to its tip, which is gray; tips of the scapular and lesser quills whitish. Some small feathers near the eye, and a collar round the middle of the neck, pitch-black. Rest of plumage white, the neck above and whole under plumage deeply tinged with peach blossom red in recent specimens. Bill black, its rictus and the edges of the eyelids reddish orange. Legs and feet vermilion red; nails blackish. Length 14 inches, wing 10.5, tail 5.5. Bill above, .75, along gape 1.25, tarsus 1.—1.12." (Richardson).

Habitat. Arctic Regions.

We have never had the pleasure of examining a specimen of this exquisite Gull, and are therefore obliged to copy the description from Richardson. This author admits that the bird was named *Larus roseus* the year before he called it *L. Rossii*; but claims precedence for his name, on the ground that his was the first published description.

Genus VII. *XEMA* Leach.

Xema, Leach, 1818; (fide Gen. Rep. t. *Larus Sabini*, J. Sab.)

Gavia Macgill. 1842. p.

24. *XEMA SABINI* Leach ex Sab.

Larus Sabini, J. Sab. 1818. *Xema Sabini*, Leach, 1825. *Gavia Sabini*, Macgill. 1842.

Sp. Char.—Adult, breeding plumage. Bill black to the angle, abruptly bright chrome from angle to tip. Mouth bright orange; eyelids orange; legs and feet black. Hood uniform clear deep slate, bounded inferiorly by a band, narrowest 1862.]

on the nape, of deep velvety black. Lower parts of neck all round, tail and its coverts, four inner primaries, secondaries, greater part of greater coverts, tips of tertials, except the innermost, and whole under parts, pure white. Mantle slatey blue, extending quite to the tips of the inner tertials. Edge of wing, from the carpal, with the bastard wing, black. First five primaries, with their shafts, black; their extreme tips, and the outer half of the inner webs, to near the end, white. Other primaries white, the sixth with a touch of black on the outer web; web near the base, extending a little on the inner web. Emargination of tail 1.25 inches. Length 13.75; wing 10.75. Bill 1.00, along gape 1.50, height at angle .30; tarsus 1.25, middle toe and claw same.

Habitat.—Arctic America. Lake Winnipeg. (Kennicott.)

The preceding description was drawn up from a very beautiful and perfect specimen, collected on Lake Winnipeg by Mr. Kennicott.

Genus VIII. CREAGRUS Bonap.

Creagrus Bp. 1854. fide gen. Rep.

25. CREAGRUS FURCATUS (Neboux.)

Larus furcatus Neboux. *Xema furcatus*. Bruch 1853. *Creagrus furcatus* Bruch 1855.

Sp. Char.—"Adult: Head and nearly all of the neck grayish brown; two small rounded white spots embracing symmetrically the base of the upper mandible; mantle grayish white; breast, abdomen, and under wing coverts white; wings extend beyond the tail; primaries black on their inner and outer edges; the smaller wing coverts white; the greater slate color bordered with white; tail very much forked and white, the two outer tail feathers much longer than is usual in this class of birds; bill very much bent, black at the base and white at the extremity; iris red; eyelids orange; tarsi and feet red; claws black.

"Total length 60 centimetres."

"*Habitat*.—California."

Of this rare and remarkable Gull I have never seen a specimen; but copy the description from the General Report, to complete this very cursory notice of the Gulls of North America.

Catalogue of Birds collected by the United States North Pacific Surveying and Exploring Expedition, in command of Capt. John Rodgers, United States Navy, with notes and descriptions of new species.

BY JOHN CASSIN.

1. *FALCO PEREGRINUS*, Gmelin.

From Japan.

We find in the collection one very fine adult specimen, quite identical with specimens from Asia in the Museum of the Academy, and the first ever brought to this country from Japan. Mr. Stimpson's note is, "shot by Mr. Charles Wright in the hills west of the city of Hakodadi, Island of Jesso, June, 1855."

2. *MICRONISUS BADIUS*, (Gmelin).

From China. "Hong Kong, March, 1855, collected by Mr. Salvadora Pelkey." (Mr. Stimpson.)

3. *BUTEO VULGARIS*, Bechstein.

Buteo vulgaris japonicus, Temm. and Schleg., Faun. Japon. Aves, p. 16.

From China. The only specimen is in light colored plumage and not adult. "Common about the harbor of Hong Kong, March, 1855." (Mr. Stimpson.)

4. *MILVUS GOVINDA*, Sykes.

Milvus melanotis, Temm. and Schleg., Faun. Jap. Aves, p. 14, (1850).

[June,

ences for the use of students who have paid less attention than myself to the subject.*

In concluding, I desire to express my thanks to several members of the Academy of Natural Sciences who have assisted and encouraged me, and especially to Dr. Jos. Leidy.

A Review of the TERNS of North America.

BY ELLIOTT COUES.

Considerable difference has prevailed among ornithological writers with regard to the relationships of many of the North American *Sterninæ* with the representative species of Europe. Having at command a very extensive series of specimens from both continents, I have instituted a careful comparison of the more or less intimately related species, believing that the results of such an investigation would not prove unacceptable to ornithologists. While this has been the principal aim of the present paper, I have endeavored to present fairly the data tending to determine some other points of synonymy and relationship which even at this late day remain open to discussion; and to give such stages of plumage as are not already too well known to require notice. The paper is not to be considered in any sense as a monograph; I have endeavored to express its character in its title.

I am under particular obligations to Mr. G. N. Lawrence and Mr. D. G. Elliot, for the opportunity of examining several unique and typical specimens, and unusual stages of plumage, of which the museum of the Smithsonian Institution does not contain examples.

Family *LARIDÆ*.

Subfamily *STERNINÆ*.

Section *STERNEÆ*.

Genus *GELOCHELIDON* Brehm.

Gelochelidon, Brehm, Vög. Deutsch. 1830. Type *S. anglica*, Mont.
Laropis, Wagler, Isis, 1832, p. 1225. Same type.

CHAR.—Bill shorter than the head, extremely robust, not very acute; its height at base nearly a third of its total length along culmen; prominence at symphysis well marked, but not very acute, situated so far back as to make the gonys equal in length to the rami, reckoning from the termination of the feathers on the side of the mandible. Culmen very convex; gonys straight; commissure gently curved. Wings exceedingly long, and acute; each feather a full inch longer than the next. Tail rather short, contained $2\frac{1}{2}$ times in the wing; in form deeply emarginate, but its lateral feathers without the elongation of *Sterna*. Feet long and stout; tarsus a little shorter than the bill, exceeding the middle toe and claw. Hind toe well developed; inner shorter

* Several authors not mentioned in our former work may here be briefly cited.

Borellus, De Motu Animalium.

Camper, Beobachtungen der Berlinischen Gesellschaft, vol. i. 1787.

Von dem Fluge der Voegel, Schriften der Berlinischen Gesellschaft, vol. ii. 1781, p. 214.

Mayer, Das aufrecht Stehen. Mueller's Archiv, vol. xx. 1853, p. 9.

Fick, Ueber die Gestaltung der Gelenkflaechen. Mueller's Archiv, 1853, vol. xx. p. 657.

Schuebler, Bedeutung der Mathematik fuer die Naturgeschichte. Jahreshefte des Vereins fuer Vaterlandskunde, Stuttgart, 1849.

Dr. J. Aiken Meigs, Relation of Atomic Heat to Crystalline Form, vol. iii. Jour. Acad. Nat. Sc. Philadelphia, 1855-58, p. 105.

Prof. Popoff, Description de la Courbe fruiforme. Bulletin de la Société des Naturalistes de Moscou, 1859, part i. p. 283.

Zeising, Ueber die Metamorphosen in den Verhaeltnissen der menschlichen Gestalt. Acta Academiæ Cesareæ Leopoldino-Carolinæ, vol. xxvii. part ii.

than outer; interdigital membranes deeply incised, especially the inner. Tail and rump concolor with the back. Size moderate.

Gelochelidon is a well-marked generic form of the *Sterninae*, embracing several species agreeing in their short, very robust bills, exceedingly long wings, lengthened tarsi, and short tail,—which latter never attains the deeply-forked shape of typical *Sternae*. It differs in coloration above from most of the other genera of Terns, in having the pearl blue mantle continued over the rump and tail.

The name *Gelochelidon* was proposed by Brehm two years before Wagler instituted his genus *Laropsis*. Both are founded upon the same type,—*S. anglica*, Mont.

GEOCHELIDON ANGLICA Bp. ex Mont.

Sterna anglica, Montagu, and of authors.

Thalasseus anglicus, Boie, Isis, 1822, p. 563.

Laropsis anglica, Wagler, Isis, 1832, p. 1225.

Gelochelidon anglica, Bp. Comp. List, 1838, p. 61.

Gelochelidon palustris, Macgill., Man. Orn., 1842, ii. p. 237.

Sterna aranea, Wilson, Am. Orn. Lawrence, Gen. Rep., 1858, p. 859.

Gelochelidon aranea, Bonap., Comp. List, 1838, p. 61.

DIAG.—*Sterna* rostro breve, robustissimo, nigro; dorso cærulescente-perlaceo, uropygio caudaque concoloribus; remigibus primariis argentato-griseis, vix albo intus marginatis, nisi basin versus; corpore subtus albo, pedibus nigris.

Habitat.—Atlantic Coast of America, from Massachusetts southward. Europe.

This species differs from all the other Terns of North America, except *Sterna antillarum*, in having the rump and tail of the same color with the back. Its primaries differ from other species—though approaching nearest to *Thalasseus caspius*—in having the inner webs white for a comparatively short space; and the white is not pure, nor is there a very trenchant line of division between it and the dark portions of the feathers.

I have not a sufficient number of skins before me for a perfectly satisfactory comparison of the birds of the two continents, but, so far as I can judge, I am decidedly inclined to agree with Audubon in opinion, that no difference exists. I have minutely compared the specimens before me, and found them absolutely identical in every particular of size, form and color.

The American bird was first described by Wilson, under the name of *Sterna aranea*, that author, perhaps, considering it distinct from, but much more probably being unaware of the existence of, the European bird. It was very properly referred by subsequent American writers,—Nuttall, Audubon, and Bonaparte up to 1838,—to the latter. At that date, in his Comparative List, Bonaparte distinguishes it from the European bird under the name of *Gelochelidon aranea*, and his example has been generally followed by writers since that time.

Genus THALASSEUS Boie.

Thalasseus, Boie, Isis, 1822, 563. Type *S. caspia*, Pall.

Hydroprogne, Kaup, Sk. Ent. Eur. Thierw., 1829, 71. Same type.

Sylochelidon, Brehm, Vög. Deutsch. 1830. Same type.

Helopus, Wagler, Isis, 1832, 1224. Same type.

Actochelidon, Kaup, Sk. Ent. Eur. Thierw., 1829, 31. Type *S. cantiaea*, Gm.

CH.—Size very large, large, or moderate; general form more or less robust; a decided occipital crest. Bill as long as, or longer than, the head, robust, height at base a third to a fourth the length of culmen. Culmen variable in amount of curvature; position of the angle at symphysis variable. Wings moderately long (for this subfamily); pointed and acute; but the first primary not surpassing the second by as much as the latter surpasses the third. Tail moderate or short; in the type of the genus very short, being contained three times in the wing, and but moderately emarginate; in other species more

[Dec.

St. anglica, Naumann, N. V. L., 1840 XII, p. 38, pl. 249.

"Genus Man. Brit. Vert." (Naum)

"Gardine & Selby. Illustr. Brit Orn." (Naum)

Eyton, Rarer Brit Birds 1836 p. 97.

Sterna Pectoria, Brehm, Beiträge III. p. 630. (Naum)

Goloc. baltica, - agraria, meridionalis, aranea, Brehm,

Naturg. v. d. Vögelwelt. Np. 772, 773, 774, 775.

S. anglica à Eschsch, Np. 77, p. 301 pl. CXXVII f. 270

Eschsch. Ann. Np. dyc. II, p. 354

Audubon. Ayn. 1839. p. 316

S. pectoria, Brehm Lehr. Naturg. Vög. Eur. 1823 p. 683.

Stichelidon palustris Naup. Brit. Birds v.

S. anglica, Deft. II p. 336. Temm. II 1820 p. 744. Kup. p. 98.

Schweiz Eur. M. h. 374; Schleg. p. 130.

S. aranea Vieill. Nouv. Dict. 1819. t. xxxii p. 169; M. Naug p. 398.

"Sternen tschevrava" Dögl.

[illegible]

elongated and more deeply forked, and contained only about twice in the wing. Feet short and stout, black; tarsi about two-thirds the bill, or rather less; as long as, or slightly longer than, the middle toe and claw. Webs moderately incised, the inner the most so. Hind toe very short.

This genus, as at present constituted, is chiefly distinguished from *Sterna* by its large size and general robust form, stout bill and feet, and (in typical species) much shorter and less forked tail. In the preceding diagnosis I have been obliged to define the genus with considerable latitude from the somewhat dissimilar types at present retained in it. Thus, if we take the *Th. caspius*, and *Th. cantiacus*, which may be considered as representing the two extremes of form, we shall find great discrepancies in such important features as shape and robustness of bill, amount of emargination of tail, &c.; and regarding these extremes alone, might well be inclined to separate them. Examination, however, of intermediate species, such as *T. regius* and *elegans*, of North America, *T. velox*, of Europe, &c., will show so gradual a transition in nearly every feature, from one extreme to the other, that it becomes exceedingly difficult to draw a line which shall naturally divide the group into two or more genera. In view of the above facts, I prefer, for the present at least, to retain the several species under a single genus, as they certainly do differ, markedly, from *Sterna* in important characteristics, although presenting the above discrepancies among themselves.

It is not impossible, however, that *T. caspius*, with one or two other very closely allied species from various parts of the world, may be, without impropriety, separated generically from the others. This species is typical of a group, all intimately allied, which are pre-eminently distinguished by their exceedingly large, high, robust bills, very stout feet, remarkably short tails,—the lateral feathers of which are scarcely at all elongated, and are not tapering nor acuminate,—and general large powerful form. The genus might, by the exclusion of this form, be greatly restricted, and much more rigidly defined.

Of the five synonyms given at the head of this article, all, with the exception of *Actocheilidon*, (the type of which is *S. cantiaca*, Gm.) are based upon *S. caspius*, Pallas. Of these *Thalasseus*, of Boie, has priority in point of date, and is the name to be adopted for the genus. Boie's genus, however, is considered to be based upon *S. caspius*, merely from the fact of that species being the first mentioned, no particular type being indicated. In the event of the separation of *S. caspius* and its intimate allies, above suggested, it might be well to apply the name *Hydroprogne* to the restricted group, *Thalasseus* being used to designate the remaining species. In view of the very slight reasons for considering *Thalasseus* as having special reference to *S. caspius*, such a procedure would be hardly, if at all, an infringement on the rules of nomenclature, and would obviate the necessity of presenting *regia*, *elegans* and their congeners under a generic designation not before employed,—viz.: *Actocheilidon*.

THALASSEUS CASPIUS Boie ex Pall.

Sterna tschegrava, Lepechin, Nov. Com. Pet. xiv. p. 500.

Sterna caspia, Pallas, Nov. Com. Pet. xiv. p. 582. Lawrence, Gen. Rep. Birds, 1838, p. 859, and of most authors.

Thalasseus caspius, Boie, Isis, 1822, p. 563.

Hydroprogne caspia, Kaup, Sk. Ent. Eur. Thierw., 1829, p. 91.

Helopus caspius, Wagler, Isis, 1832, p. 1224.

Sylocheilidon caspia, Brehm, Bonaparte, Comp. List, 1838. Lawrence, Proc. N. Y. Lyc. Nat. Hist., 1850, v. 37.

Sterna megarhynchos, Meyer, Taschenb. Deuts., ii. p. 457.

DIAG.—T. rostro maximo, robustissimo, rubro; palpebris inferioribus albis; remigibus griseo-fuscis, supra argentatis, nec intus albis; caudâ breviorē, emarginatâ; pedibus validissimis, nigris, digito medio cum ungue tarso breviorē.

1862.]

Habitat.—In America, the interior of the Fur Countries; Hudson's Bay; Labrador; in winter ranging southward along the Atlantic Coast as far as New Jersey.

This species in all its stages of plumage is too well known to require any further description.

Quite a large series of American skins, of all ages, compared with two fully adult birds from Europe, constantly differ in size and proportion, as shown by the following measurements:

Comparative measurements of American and European Birds.

	American.	European.
Length of bill along culmen.....	2.75*	2.40
“ “ “ gape.....	4.00	3.55
Height “ at base.....	0.90	0.75
Width “ opposite nostrils.....	0.50	0.50
Length of wing from flexure.....	16.50	15.00
“ “ tarsus.....	1.75	1.65
“ “ middle toe and claw.....	1.65	1.55
“ “ tail.....	5.75	5.25

The above measurements indicate the average of the specimens from both countries before me, from which it will be seen that the American bird is decidedly the larger. While the bill is nearly a third of an inch longer, it is also especially remarkable for its great comparative height at the base, and its width at base being no greater than in the European bird, gives it quite a different shape. The next most patent difference lies in the length of wing from the flexure, in which the American bird surpasses the European by fully $1\frac{1}{2}$ inches. Specimens of both, of course, differ among themselves to a degree; but the greatest variation in adult American skins is hardly half an inch. The wing of the adult European bird, indeed, hardly equals that of a young bird of the year from America; and it is well known how much smaller are the young of all Terns than the adults. The tarsi and toes of the two, as well as the tail, differ in a considerable degree, but not so markedly as do the bill and wings. I find no differences whatever in the color of the two birds.

With but two specimens of the European bird before me, I do not venture to formally separate from it its North American representative. But should these examples prove to represent fairly the characters of the European bird, and the discrepancies in size and proportion above pointed out prove constant, I should not hesitate to do so. In that event I would propose for our bird—in the absence of any very peculiar characters on which to base a name, and in view of the fact that it is the largest and most magnificent Tern of our continent—the name of *THALASSEUS IMPERATOR*.

The following would be its diagnosis:

Th. Thalasseo caspio coloribus similis; sed omnino major, rostro etiam validiore, longiore, altiore nec latiore. Rostr. long. 2.75 poll.; alæ 16.50.

The proper specific appellation of the Caspian Tern is not "*caspia* Pallas," but "*tschegrava* Lepechin," which latter name is proposed in the same work in which Pallas calls the bird "*caspia*," but has priority by several pages. As, however, the word is not only barbarous, but also exceedingly cacophonous, and especially as *caspia* has become so well established by common consent, I do not think it would be expedient to supersede Pallas' name, in view of the very slight priority of that of Lepechin.

THALASSEUS REGIUS Gambel.

Sterna cayana, Bon., 1828; Nutt., 1834; Aud., 1839 and 1844; but not of Latham.

* Inches and hundredths.

T. imperator Coues

Adult, breeding plumage. (No. 17978 Hudson's Bay)

Bill about as long as the head, greatly exceeding tarsus, & exceedingly robust, much compressed, deep at the base, the tip not very acute. The culmen is broad and flattened at the base, narrower & more compressed anteriorly, about straight to beyond the nostrils, then regularly declinate = convex. Cornua are much curved for its whole length, downward of declination, becoming downward the tip. Pulvis of ramus very slightly curved, forams long, and about straight. Symphyseal eminence is but slightly pronounced. Nasal groove short and wide, the nostrils being placed at its anterior extremity; several striae proceed out from the feet groove on to the bill; but the lower mandible is quite smooth. Nostrils of ordinary relative size & shape. Submental space bare of feathers for about half its length. Outline of feathers on side of both mandibles much as in other terninae.

Palate is very concave antero posteriorly, but laterally it is very flat, and not arched or vaulted. For two inches and a half the roof of the mouth is quite smooth, with only slight traces of the ridges that are so conspicuous posteriorly. Just within the front is a groove for the reception of the inferior mandible. The nasal aperture begins $2\frac{1}{2}$ inches from the tip and is more than an inch in length. The lateral ridges are short beginning only slightly in advance of the nasal aperture, but they are exceedingly high and thick, their edges so highly papillate as to appear serrated. The shape of the mouth is an ~~long~~ isovale beak, with very concave sides.

Wing of ordinary length and shape for the adult. The primaries are quite broad at the base, but two or three inches from the tip become rapidly narrower, and taper to an acute point. The first secondary feathers end as much as it is itself surpassed by the third. The tail is of peculiar shape, very short, emarginate in web. The minute feathers broad to the very tip, which are even rounded. The outer one grow gradually more & more acute; the outer pair ~~forming~~ to an acute point, but the feather has no tapering nor filamentous character. The feet are exceedingly short, moderately stout. The tarsus compressed. The tibiae are bare but a very short distance; only about $\frac{3}{4}$ inch, or about as much as in the smaller species. The tarsus is exceedingly peculiar in having the anterior scutellum all the way broken up into plates, like the lateral posterior regions only larger & smoother & flatter more regular; the toes superiorly have a good deal of this same character. The ventral feet are covered with very small rough elevated irregular scales, as well as the web, middle toe a little less than tarsus. Outer very long, as that its tip reaches to beyond base of middle claw; inner very short to top of claw falling just short of the base of middle claw. Nails extremely abbreviated. Claws all short, about little curved or acute. Webs rather narrow, their margins very deeply in web, especially the inner, whose inner margin reaches to the middle between the 2nd and middle toe.

Scayanus is y. n. page 504: S. eury and Lark page 804.

S. cayana, *Detkay*, p. 299 pl. CXXV, fig 277. *And. Sp.*, p. 316
Thal. cayana, *Bp. comp. List.*, 1838 p. 61

♂, imberator, adult, continued. Bill bright orange red, growing lighter and more diaphanous towards the tip. Plumage, except at erect to below the eye, greenish glossy black, but leaves & lower palpebrae white, and gives a broad white space along the side of the upper mandible: which white however, does not extend to the end of the feathers, which make whole of the neck all round, chin, throat & under parts, under surface of wing & edge of wing, under surface of tail, white. On the neck the very light pearl gray plumage has nearly a distinct line of definition from the white; and on the rump the white blue mantle feathers very gradually into the white, - but most of the tail feathers, and especially the central ones retain an appreciable wash of pearl. The primary ^{rhachides} ~~feathers~~ are yellowish white; the primaries themselves are grayish black, but when new are deeply silvered over with a thick hoariness, which on their upper surfaces causes them to appear very much lighter than they really are. On the inner web of all there is a central lighter field which runs up some distance along the feather, but it is very narrow even on the prespreading and does not extend to the line of definition from the white. Feet black, with toes & claws ^{black} ~~black~~, inner web second and pure white. ^{feathers and upper mandible} ~~feathers and upper mandible~~ have rounded ends.

Th. regius, Bill 275; gape 375; height at base 75; width of wings 1.375; wing 1450; tail 750; depth of fork .300; extreme bare .90; tarsus 137 middle toe & claw .140.

[illegible]

The palpi are long and marrow; does not extend below the eyes; ~~now~~ reaches to the extreme tip of its feet in case of *Aspa* *manducata*. Mantle very light, leaves only a soup for the tail: fades into white before the edge of the tertia which are white. 'Secondaries' wholly pure white, except a space on their outer webs near the tip which is a much deeper color than the back. Foret pinning with its outer web grayish black; its inner web with a long space of same along the shaft for its whole length; very narrow at its common cum

Sterna regia, Gambel, Pr. A. N. S. Ph. iv. 1848, 128.

Thalasseus regius, Id. J. A. N. S. Ph. i. 2d ser. 1849, 228.

DIAG.—Thal. rostro magno, robusto, nec peracuto, aurantio-rubro; remige primâ internè albâ nec ad apicem extensâ marginatâ; pedibus nigris, medio digito cum ungue non tarso brevior. Long. rost. 2·60 poll.; alæ 14·50; tarsi 1·30.

Habitat.—South Atlantic Coast of America; Antilles in winter. California.

A good series of this bird, collected in Jamaica, enables me to give its winter plumage, as well as that of the young of the year.

Winter Plumage.—Bill less brightly colored than in summer, its tip and cutting edges dull yellowish. Front white, crown variegated with black and white, the former color increasing on the occiput and nuchal crest, which latter, though shorter than in summer, is almost or quite unmixed with white. This black extends forwards on the sides of the head to the eye, which it includes. The tail is not pure white, as in summer, but is glossed over with the bluish of the mantle, which deepens towards the tips of the feathers into dusky plumbeous. Otherwise as in summer.

Young of the Year in August.—Bill considerably smaller and shorter than in the adult; its tip less acute, and its angles and ridges less sharply defined; mostly reddish-yellow, but light yellowish at tip. Crown much as in the adults in winter; but the occipital crest scarcely recognizable as such. Upper parts mostly white; but the pearl-gray of the adults appearing in irregular patches, and the whole back marked with small, irregularly-shaped, but well-defined spots of brown. On the tertials the brown occupies nearly the whole of each feather, a narrow edge only remaining white. Lesser wing coverts dusky plumbeous. Primaries much as in the adults, but the line of demarcation of the black and white wanting sharpness of definition. Tail basally white, but soon becoming plumbeous, then decidedly brownish, the extreme tips of the feathers again markedly white. Otherwise as in the adults.

The species is so distinct from any other of North America, that it hardly requires comparison. *Caspus* is most closely allied (except *elegans*) and has been confounded with it. But the differences between the two are very great. *Regius* is a much smaller bird, its wing two inches or more shorter. The bill is nearly or quite as long, but it is much slenderer and every way weaker. The tail is very decidedly longer and more forked, almost equalling in this respect *elegans* or *acutiflavus*. The feet, with the same relative proportions of tarsus and toes, are proportionally shorter. In color the two are quite similar, except in the primaries where a very marked difference is observable. The inner webs of *caspus* are wholly dull hoary plumbeous ash; while the inner web of *regius* has a very sharply defined white margin, as in *elegans* or *acutiflavus*, and *Sterna* generally.

But while there is thus no difficulty in separating it from its North American allies, the case is quite different from the Central and South American species, with which it is more or less intimately related. It was, up to 1848, confounded with *S. cayana*, Lath. (*S. cayanensis*, Gm.) This error was first corrected by Gambel (l. c.), and a distinct name imposed. It is difficult, perhaps impossible, to determine to what species Latham's name is to be referred. His brief diagnosis is "St. griseâ, pennis rufo-marginatis, occipite nigro, corpore subtus albo." Habitat in Cayana. 16 pollices longa." This description is evidently that of a young bird. Gambel is inclined to consider it as "the immature plumage of one of the yellow-billed species of the Brazilian coast, figured by Lichtenstein, probably *S. magnirostris*." He further remarks that "young birds of our species would agree pretty well with the *erythrorhyncha*, of De Weid, as they are somewhat smaller and less proportioned."

There is a specimen in the Smithsonian collection, presented by Mr. Sclater, from Jamaica. It was killed March 23d, and is in moult; probably, a young bird putting on its first spring livery, though still retaining its winter marks of 1862.]

white front, etc. At first sight it was referred to *T. regius*, but on closer examination several important discrepancies were observed. The bill, though just about as long as in *regius*, was very decidedly smaller, weaker, with the angle at symphysis less developed; it was of a clear straw-yellow, and in size and shape about intermediate between *regius* and *elegans*. The lateral tail feathers appear broader and rounded at their tip, instead of tapering and attenuated. An important difference is seen in the feet, the middle toe and claw being decidedly longer than the tarsus, instead of equal to it. Mr. Sclater did not label this bird, and I am equally uncertain what name to apply. It seems to be not at all improbable that it may be the *S. cayana*, of Latham, and, if so, would substantiate Gambel's position, for it is certainly not the bird he named *regia*.

THALASSEUS ELEGANS Gamb.

Sterna elegans, Gambel, Pr. A. N. S. Ph. iv. 1848, 129. Lawrence, Gen. Rep. Birds, 1858, 860. Atlas, pl. xciv.

Thalasseus elegans, Gambel, J. A. N. S. Ph. 2d ser. i. 1849, 228.

DIAG.—*Th. Thalasseo regio similis*; sed multo minor, rostro graciliore, digito medio cum ungue tarso brevior; corpore subtus rosaceo-albo.

Habitat.—Coast of California.

The most striking morphological character of this species, as compared with its nearest ally, *T. regia*, is the comparative length of the tarsus and toes. In *regia* the middle toe is, with the claw, just as long as the tarsus; while the same parts in *elegans* are very considerably shorter.

This beautiful species has been so accurately described by its discoverer, and its affinities so correctly indicated, that any further remarks upon these points would be *de trop*. It is as yet almost unknown in cabinets. A very fine specimen, in winter plumage, has been deposited in the Smithsonian by J. Hepburn, Esq., and is the original of the plate above cited. It agrees minutely with Gambel's description.

THALASSEUS ACUFLAVIDUS (Cabot).

Sterna Boysii, Nuttall, Man. Orn. ii. 1834, 276. Sed non Lath., 1790.

Sterna canitiaca, Audubon, Orn. Biog. iii. 1835, 531. Id. B. A. vii. 1844, 87. Sed non Gmel., 1788.

Sterna acufilavida, Cabot, Proc. Bost. Soc. N. H., 1837, ii. 257. Lawr. Gen. Rep. 1858, 860.

Thalasseus acufilavides, ——— ?

DIAG.—*T. Thalasseo canitiaco staturâ, formâ, coloribusque omnino similis*; sed margine albâ pogonii interni remigis primæ angustior, nec in apicem pennæ porrectâ.

Habitat.—Atlantic Coast of North America, ranging into the Antilles in winter.

The young of the year is considerably smaller than the adult (wing $\frac{1}{2}$ inch shorter) as is usual in this subfamily. The bill is shorter and weaker, and is without any very distinct definition of angles and ridges. It is brownish black, the extreme point only yellowish. The crown, front and nape are brownish black, variegated with white, the white touches very small on the front. The upper parts are as in the adults; but everywhere marked with irregularly-shaped, but well-defined spots and transverse bars of decided brownish black. There is no well formed occipital crest, until after the first moult. The primaries are like those of the adults. The tail, however, is very different. The feathers for three-fourths their length are of the color of the back; this color gradually deepens, until towards the tips it becomes brownish black,—each feather having a terminal irregular edge left whitish. The tail, in shape, is simply deeply emarginate, the outer feathers being but slightly longer than the second.

In winter the yellow tip of the bill of the adults decreases in extent and intensity of color; the front is white, either pure or speckled with black; the crown variegated with black and white; but the long occipital crest, which does

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where it occupies all the web, rest of web pure white and
from its former by a straight, well marked, transverse line.
The next four primaries have the same general character; but
the white is shorter successively, on them, as well as narrower,
and is bordered in its inner edge again with the dark for
an increasing distance. The 6th inclusive & others have brown
grayish black, not as wholly pearl green their inner webs
margined with white. Feet black, soles yellow but orange.

Wing, depth of fork less, $1\frac{1}{2}$ inches. Cerebral feathers
not very attenuated. Color of back more conspicuous on the rump.

S. caudatus DeKay p. 303. pl. cxxiv, fig 274.
Audubon Synopsis 1839 p. 317.

Saccolairides. Bill much longer than to head, exceeding the
middle toe & claw tarsus, quite slender attenuated, very acutely
tipped. Culmen regularly slightly decurved from tip to base. Com-
missure regularly curved. ~~But~~ Ramus very short, throat outline
very concave; gony very long, about straight. Eminent in sym-
metry perceptible. Submentum space short, but a little narrow,
about half filled with feathers. Nasal groove very long, narrow
not deep, extending more than half the length of the bill, finally
subsiding on the vomer. Both mandibles marked with long thin
oblique striae. Outline of feathers as usual. Wings moderately
long for this subgenus, primaries quite broad towards the distal
of their tip, not very acute. Tail exactly as in regius. Feet
quite slender, tarsus moderately compressed. Anterior & scutellum
as usual. Nails moderately increased for this genus, the claws
all long strongly arched acute, inner edge and the inner
dilated.

Bill 2.25, gape 3.00, height at base .48, width .37; ramus 1.00 gony 1.20 Wing
tail 0.00 depth fork 2.35. Tarsus 1.00 toe & claw slightly more.

Billum just extends below eye, not leaves it.
It is all on the up on the side of the head & feathers Rump pure white.
Mantle very light. Rectrices somewhat of bluish. Outer $\frac{1}{2}$ primaries
as in regius.



not disappear at this season, remains of an unmixed brownish black. The lateral tail feathers are shorter. The bird otherwise as in summer.

At all seasons the yellow tip of the bill varies in extent, and it also presents a varying regularity and sharpness of division from the black. I am inclined to think that the extent of the yellow depends upon the age of the bird: its intensity upon the season. The longest yellow tip before me measures three-fourths of an inch, the shortest one-fourth. In a large series of specimens the tarsi and toes scarcely differ appreciably. The markings of the primaries, in their extent and disposition, are also remarkably constant. The variation in length of wing from flexure in adult summer birds is about half an inch. The tail varies somewhat in depth of fork, but is always less than in the species of *Sterna* proper.

A series of winter skins from Jamaica in, probably, their first moult, differ from adult examples from various points on the Atlantic Coast in being every way considerably smaller. The bills are about a third of an inch shorter than the average; and other parts differ proportionally.

The American Sandwich Tern was first separated from the European by Cabot, (l. c.) in 1847. Most of the points of difference, however, assigned by that writer, disappear when large series from both continents are compared. The difference in the measurements given exists equally in individuals of both species; for, as will be seen from the above remarks, specimens vary greatly in these respects. After an attentive examination of a large number of skins, I can appreciate no differences whatever in these respects; and in size and proportions, of bill as well as of the whole body, the two appear identical. Neither can distinctive characters be drawn from the yellow tip of the bill. In both species the line of union of the yellow and black is equally irregular, depending for its exact character on the age of the bird. In both, the yellow runs along the gonys, nearly or quite to the angle at the symphysis. It also extends, but in a less degree, along the ridge of the upper mandible, and even for a little way on the cutting edges of both mandibles. The outline of the yellow on the sides of the bill is also more usually concavo-convex than perfectly straight and perpendicular. The trenchant line of union, which existed in the specimen described by Cabot, must have been rather exceptional. I cannot appreciate any difference in the width of the bills of the two in the series before me. A discrepancy in the claws of the two does not exist as constant.

We are reduced, therefore, in separating the two birds, to the single remaining character given by Cabot,—that of the primaries. These parts in the American bird are not darker than those of the European, since their color depends on their age; but a decided difference in the white margins of the inner webs exists uniformly in all the specimens from either country that I have ever examined. In the European bird the white of the inner web of the first primary occupies at the base nearly the whole of the web, the dark portion being merely a narrow line along the shaft. This black portion widens but little as it runs along the feather, so that the white border extends quite broadly to the very tip of the feather, which it entirely occupies. In the American, on the contrary, the black portion is in its whole length wider, and, about one and a half inches from the tip becomes quite suddenly very decidedly broader, so much so as nearly to cut off the white, which latter continues forward a little further, but only as a very narrow bordering line, and finally disappears before it reaches the tip. The same holds good, though somewhat less markedly, of the second, third and fourth primaries. The following would therefore constitute the

Differential diagnoses of the American and European Bird.

Th. cantiacus.—White margins of inner web of outer three or four primaries wide, extending quite to tip, which it wholly occupies. Breadth of white portion $1\frac{1}{2}$ inches from tip of first primary, .25 of inch.

1862.]

Th. acyflavidus.—White margins of inner web of three or four outer primaries narrow, falling short of tip, which is wholly occupied by the black portion. Breadth of white margin $1\frac{1}{2}$ inches from tip of first primary, $\cdot 10$ of an inch.

Genus STERNA Linnæus.

Sterna, Linn., Syst. Nat. 1748. Type, *S. hirundo*, Linn.

Thalassæa, Kaup, Sk. Ent. Eur. Theirw. 1829, p. 97. Type, *S. paradisea*, Brün.

Hydrocecropis, Boie, Isis, 1844, p. 178. Type, — ? (includes *S. paradisea*.)

Sternula, Boie, Isis, 1822, 563. Type, *S. minuta*, Linn.

CH.—Head without a decided occipital crest, but the feathers of the parts somewhat elongated; size moderate, or very small; general form slender and graceful. Bill about as long as, or slightly shorter than, the head, greatly exceeding the tarsus; of varying stoutness, but usually quite slender, very acute, the culmen gently curved, being slightly declinato-convex. Commissure gently curved; outline of rami a little concave, of gonyx quite straight, the angle at symphysis well marked and acute, but not very prominent. Wings long and pointed. Tail of variable length and amount of forking, but always decidedly greatly forked; the lateral feathers elongated, slender and tapering, greatly surpassing the others. Tail contained in the wing of the type of the genus about $1\frac{3}{4}$ times; in *arctica* $1\frac{1}{2}$ times; while the tail of *paradisea* is but little less than the wing. Tarsus slender, slightly shorter than the middle toe and claw, slightly longer than the middle toe alone; much shorter than the bill, about equal to the distance between the projection at symphysis and the tip of the inferior mandible.

The genus *Sterna*, in the restricted acceptance in which it is employed by most modern authors, embraces quite numerous species, all more or less intimately related to *S. hirundo*. The group is one well defined, its species agreeing very closely in size, general form, pattern of coloration, and seasonal changes of plumage. Specific characters are generally found in the varying length and stoutness of bills and tarsi, amount of forking of the tail, markings of the primaries, and other less decided features of coloration.

Sterna proper has comparatively few synonyms, the principal of which are those given at the head of this article. *Thalassæa*, Kaup, and *Hydrocecropis*, Boie, are strictly synonymous, while *Sternula*, Boie, is based upon a species differing but very slightly from the type, *S. hirundo*.

"STERNA TRUDEAUI Aud."

Sterna Trudeaui, Audubon, Orn. Biog. v. 1839, 125. Lawr. Gen. Rep. Birds, 1858, 861.

I have before me a typical specimen of *Sterna Trudeaui*, belonging to J. P. Giraud, Jr., the one from which was drawn up the description in the General Report, and supposed to be also the original of Audubon's plate and description. As these are the chief descriptions of the bird which have ever appeared, and as, I believe, the specimen is the only one known to exist, it may fairly be considered to embody all that is at present known of the species. From the peculiar characters presented by it, as well as by the species which succeeds, —to both of which attach, for various obvious reasons, doubts as to validity, —it may be of advantage to examine somewhat closely into its characters, to determine if possible whether they be distinct from each other; and in that case in what they differ from *S. Forsteri*.

The bill is quite stout at the base, both as regards height and width, and tapers regularly to an acute point, the culmen being but slightly arcuate. It is precisely the length of that of an adult *Forsteri*, and also of a supposed *Havelli*.*

* The specimens of "*Havelli*" referred to, are those furnished by Mr. Lawrence, and so labelled by him.

Rev. Syn. 1839. 319.

Audubon. Synopsis, 1839 p. 318.

It is bright yellow at the tip for exactly the same distance as is the bill of "*Havelli*;" but the base, for nearly a third of the length of the bill, appears to have been in life bright orange yellow, so that only the middle of the bill is left black; whereas, in "*Havelli*," the bill is black from its yellow tip quite to the base of the upper mandible, and only a small space on the under mandible is left yellow. The front and crown are white, passing into light pearl blue on the nape, exactly as in "*Havelli*;" the circumocular fascia also exists, but it is somewhat narrower than in that species. The other upper parts are of exactly the shade of *Forsteri* or "*Havelli*;" but this color extends around the sides of the neck quite to the throat, and occupies the whole under parts of the bird, not even excepting the under tail-coverts, whereas in "*Havelli*" and *Forsteri*, the color of the same parts is nearly or quite pure white. The rump is white, as in both those species. The tail is elongated;—exactly intermediate between a full plumaged summer *Forsteri* and "*Havelli*;" it has precisely the color of the latter, the inner web of the lateral feather being somewhat lighter than in the former. The wings, in their markings and length, are identical with those of either *Forsteri* or "*Havelli*;" the tarsi and toes are fractionally of the same length, and appear of about the same color in the dried skin.

The differences therefore between "*Havelli*" and "*Trudeaui*," lie entirely in the following features: 1st. The bases of both mandibles are orange yellow for nearly half their length in "*Trudeaui*," while in "*Havelli*" a very small portion of the under mandible only is light colored. 2d. The color of the back extends undiluted over the whole under parts of "*Trudeaui*," while the same parts in "*Havelli*" are white.

The greater slenderness of the bill, and the shorter tarsi, given by Audubon as characteristic of "*Trudeaui*," in comparison with "*Havelli*," do not exist, provided the specimens before me exhibit the characters of the latter. Indeed, a comparison of fourteen specimens of *Forsteri*, three of "*Havelli*," and the single "*Trudeaui*," shows the three to be surprisingly similar in every detail of size and proportions; the bills and tarsi particularly, hardly differing as much in length as do these parts in different individuals of *hirundo* or *macroura*.

Should the color of the bill and of the under parts of "*Trudeaui*,"—more particularly the latter—prove constant, they would be abundantly sufficient to separate it from any other species. The only question is, whether the specimen under consideration is not in an entirely accidental and abnormal state of plumage, to be placed in the same category with albinism, melanism, &c. Although Audubon states that he saw other individuals like the present specimen, it appears to be the only one ever actually examined. The question is one of great interest, but one of which, unfortunately, we are no nearer the positive solution than we were twenty years ago; and I am therefore obliged *rem in medio relinquare*.

"*STERNA HAVELLI* Aud."

Sterna Havelli, Audubon, Orn. Biog. v. 1839, 122. Lawrence, Gen. Rep. Birds, 1858, 861.

So accurate a description of the winter plumage—the only one known—of this supposed species has been given by its discoverer, that it is unnecessary here to repeat it. A discussion of the essential characters assigned to it, to discover exactly what are its claims to specific distinction, may be given.

It is not a little singular that, of a species recognized for more than twenty years, the nuptial plumage should be still quite unknown. I am not aware that a specimen which could be referred to this species has ever been taken in spring or summer. There can be no doubt, however, that at that season it obtains the black pileum common to all the species of the genus,—with, probably, not even the exception of "*Trudeaui*." A specimen before me, which agrees more closely than any other with Audubon's plate and description, has the crown and occiput very noticeably variegated with black; this color, indeed, 1862.]

being almost unmixed with white on the extreme nape. The front alone is white. The character, therefore, of a black ocular fascia, and white crown, cannot be considered as diagnostic of the adult full-plumaged bird.

The chief, and, indeed, the only point to be examined, is the relationship of this species with the *S. Forsteri*,—winter specimens of which agree very closely with it. In discussing this question, it must be borne in mind that Audubon was entirely unacquainted with *S. Forsteri*, or at least did not recognize its claims to specific validity, as distinct from *S. hirundo*. Indeed, if we compare Audubon's description of his "*Havelli*" with a winter specimen of *S. Forsteri* it will be found that they correspond minutely in every particular of size, form and colors; and the characters given apply as well to the one as to the other. For, though summer specimens of *Forsteri* are quite different in the elongation of the tail, color of bill, black pileum, &c., yet in winter these features are quite changed, the tail becoming shortened, the bill blackened, and the pileum restricted to a circumocular fascia. Basing an argument, therefore, upon these data, "*S. Havelli*, Aud.," might, without the slightest impropriety, be reckoned as a synonym of *S. Forsteri*.

Three Terns, obligingly furnished for examination by Mr. Lawrence, and labelled by him "*Havelli*," differ in some respect from any winter skins of *Forsteri* which have as yet fallen under my observation. Their size and proportions, length of tarsi, elongation of tail, &c., are quite identical. The most perfect of these,—evidently an adult bird in full winter plumage,—has a stout bill, almost black, its tip for more than a fourth of an inch bright yellow. The bill in fact looks something like that of *Thalasseus cantiacus* or *acutiflavus*. There is a well-defined lateral stripe on the head; the whole crown is pure white, and even on the nape there are no traces of black, that part being light pearl color, much as the back. But the most distinctive feature of this specimen is that the tail is entirely very light pearl, the inner web of the lateral feather being scarcely, if at all, darker than the outer. A second specimen, a younger bird apparently, and evidently, from the ragged dull brown condition of its primaries, in moult, has the same decided character of tail as has the first one. The bill is even stouter at the base, and the extreme point only is slightly yellowish. The whole crown is variegated with black and white, the former being left nearly pure on the nape. The third specimen is quite like the last, but the inner web of the lateral feather is quite decidedly dusky, showing an approach to *S. Forsteri*. It will be noticed that where these three specimens are quite identical with each other, in size and proportions, they differ among themselves in colors, both of bill and feathers, and show quite a gradation towards *S. Forsteri*.

From the above remarks it will be seen that the question really hinges upon the following point, as yet not positively determined: Does the *S. Forsteri* in winter, when fully adult, ever acquire a very broad bright yellow tip to its otherwise wholly black bill, and lose entirely the dark character of the inner web of its exterior tail feather?

Now it is well known, that the younger a Forster's Tern is, the darker is the inner web of the lateral feather; and the natural inference from this fact is, that with increasing age the inner web may become nearly or even quite as light as the outer. With regard to the broad yellow tip of the bill, it will be noticed, that of the three specimens purporting to be "*S. Havelli*," each one varies in this particular; so that it would be quite impossible to consider it as diagnostic. Therefore, though unable to prove the point incontrovertably, I am decidedly of opinion that *Sterna* "*Havelli*," is merely the adult winter plumage of *S. Forsteri*, and not a distinct species.

STERNA FORSTERI Nuttall.

Sterna hirundo, Sw. et Rich., F. B. A., 1831, ii. 412, nec Linn.

Sterna Forsteri, Nuttall, Man. Orn., 1834, ii. p. 274 (in note to *S. hirundo*), and of authors.

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DIAG.—*S. Sternæ hirundini* similis: sed rostro longiore, valdè robustiore, tarsis longioribus, validioribus; caudâ magis productâ, perlaceâ, rectrice laterali pogonio interno fusco-griseo, externo albo.

Habitat.—Very extensively distributed over North America. Atlantic Coast and Gulf of Mexico. Fur countries. Great Lakes and Rivers. Texas. Utah. California.

In view of the considerations presented in the two preceding articles, it may be well to look somewhat carefully into the characters of the present species.

Adult, spring plumage.—Bill orange-yellow, black for nearly its terminal half, the extreme points of both mandibles yellowish; robust, deep at the base; culmen markedly declinato-convex, eminence at symphysis well developed; in total length from one to two-tenths of an inch longer than in *S. hirundo*. The black pileum does not extend so far down on the sides of the head as it does in *hirundo*, barely embracing the eye (the lower lid of which is white), and leaving a considerably wider white space between the eye and commissural edge of superior maxilla than in *hirundo*. The color of the back hardly differs appreciably from that species; it is perhaps a shade lighter. The wings are comparatively considerably shorter than in *hirundo*, being absolutely a little less, though *Forsteri* is a larger bird. They are very light colored, being strongly silvered with the peculiar hoariness common to most of the species of the genus; this lighter color is very observable even on the coverts. The outer web of the first primary is not black, but silvery like the others; all the primaries want the very decided white space on the inner webs which exists in *hirundo* and *macroura*; there are indications of it, indeed, on the three or four outer primaries, but the others are a nearly uniform dusky-gray, moderately hoary. The entire under parts are white, with scarcely a trace of the plumbeous which is so evident in *hirundo*, and amounts to so decided a color in *macroura*. The tail is a slightly lighter shade of the color of the mantle, separated from the latter for a short space by the decidedly white rump. The lateral feathers are much more lengthened than in *hirundo*, the elongation generally quite equalling that of *macroura*, and sometimes even exceeding it. These two lateral feathers are white on the outer web, dusky-gray on the inner. This being exactly the reverse of *hirundo*, and a very noticeable feature, was the first to draw attention to the bird, and this character being so tangible and convenient, writers have perhaps laid too much stress upon it, to the exclusion of others, quite as evident and more important. The feet are bright orange, tinged with vermilion; the tarsus shorter than the middle toe and claw; the feet longer and stouter, by over .10 of an inch, than the same parts in *hirundo*.

When the primaries become old, *i. e.*, at the approach of the spring or autumn moult, before the species begins to put on its complete summer or winter livery, the primaries lose their beautiful silvering, and become plain brown, their shafts inclining to decided yellow. They have then also distinct white spaces on their inner webs, nearly as well marked as in *hirundo* or *macroura*.

Adult, winter plumage.—The bill loses the bright orange-yellow which exists in summer, the black encroaching upon it, so that it becomes almost wholly dusky. The base of the under mandible in dried skins appears as if it might have been flesh-colored in life. The feet also lose their bright color, and incline to a dusky-yellowish. The black pileum is more or less mixed with white, the white predominating on the forehead so as to leave it nearly pure; there is always considerable black left on the nape, and also a broad band on the side of the head, embracing the eye, and reaching to the nape behind, exactly as represented in Audubon's plate of *S. Hareli*. The long lateral tail feathers become greatly shortened, so as to be but scarcely, if at all, longer than those of *hirundo* during the breeding season. The color of the inner webs becomes darker, though it does not extend so far towards the base of the feather; sometimes it invades the outer web also, towards the tip.

Young of the year, before the first moult.—Bill every way considerably smaller, 1862.]

shorter and weaker than that of the adult, and wanting its very acute tip, and sharply-defined ridges and angles; brownish-black, fading into dull flesh-color at the base of the under mandible. Front white, but the crown and nape show considerable traces of the black that is to appear, which is now mixed with a good deal of light-brown. The pearl-blue of the back and wing coverts is everywhere interrupted by irregular patches of light grayish-brown, showing a tendency to become transverse bars; this grayish-brown on the tertials deepens into brownish-black, and occupies nearly the whole extent of each feather. The primaries differ from those of the adult in having less of the silvery gloss, and the inner white spaces are more marked, being in fact much like those of the adult *hirundo*. The rump and under parts are pure white. The tail intensifies, so to speak, its adult characters as regards color; and, independently of any other feature, will always serve to identify the species. It is deeply emarginate, but the lateral feather is not greatly produced, surpassing the second by scarcely more than the latter surpasses the third. Its inner web for an inch or so from the tip, and both webs of the other feathers, are quite decidedly grayish-black; the intensity of this color, and also its extent, decreasing successively on each feather from without inwards, so that the central pair scarcely deepen their color at the tips. The outer web of the lateral feather generally stays pretty uninterruptedly white, but sometimes is just at the tip invaded by the darker color of its inner web.

The preceding descriptions embrace all the well characterized stages of plumage of this species which are known to me, though there are, of course, intermediates in great variety between those given. It is indeed a little remarkable, the number of specimens in immature or winter plumage which find their way into collections. Of the numerous examples before me, just one-half are in this state, all showing white fronts, and the usual deep black band through the eye. There would seem to be something peculiar in the habitat of this species, to cause it to differ so remarkably from its allies *hirundo* and *macroura* in this respect. I have purposely gone considerably into detail regarding these immature stages, because of the great similarity which exists between the species, and the same ages of "*S. Havelli*," if, indeed, the latter be really distinct from it. The question of the relationship of the two has been fully discussed under the head of "*S. Havelli*."

Sterna Forsteri affords a good illustration of a species, bearing so intimate a general resemblance to another, as to be confounded with it at first glance, and yet when carefully examined proving to be totally distinct. It is perfectly easy to separate it from the *hirundo* by its characters of bill, wings, tail or feet, either of which taken alone would identify it. The following table will exhibit at a glance the distinctive features of our three most intimately allied species, between which, it will be observed, there is a complete and gradual transition in almost every respect.

Differential Diagnoses of S. Forsteri, hirundo and macroura.

S. Forsteri.—Bill (average) 1.60 along culmen; depth at base .40; robust. Bill orange-yellow, nearly its terminal half black. White space between eye and cutting edge of upper mandible broad. Under parts white. Outer web of first primary silvery; the inner webs also of the others strongly hoary, without well-defined white spaces. Tail bluish-pearl, like the back, its lateral feather greatly produced (average nearly 7 inches in length); its outer web white, inner the color of the rest of the tail. Legs long and stout; length of tarsus (average) rather over .90 of an inch; orange-yellow, tinged with vermilion. Length of tarsus, middle toe and claw 2 inches.

S. hirundo.—Bill (average) 1.45 along culmen; depth at base .33; moderate. Bill vermilion-red; its terminal third black. White space between eye and cutting edge of upper mandible narrower than in *Forsteri*. Under parts lightly washed with plumbeous, fading into white on the throat and abdomen. Outer

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St. hirundo, Linn. Fa. Suec. 1746, p. 158. Bris. page 203. pl. 19, fig. 1.
Gmel. S. N. 1 pars 2, p. 606 1788.
Lath. Ind. Orn. II 1791 p. 807.
Nilsson. Orn. Suec. II p. 156.
Schaffer, Mus. Juv. 1779 p. 65.
Latham. 1790 II p. 807. - Gmelin, p. 606.
Beckm. N. F. p. 298 pl. ~~xxx~~ cxxv fig 275-6
Audubon, Synopsis 1839 page, 318.
McGill. Man. orn. II, 1842 p. 231
Wegland. p. 342; Meyer N. F. p. ~~349~~ 459. Temm II 1810, 1740
Vieill. Nouv. Dict. 1819, vol 32, p. 172.; M. Tring, p. ~~400~~ 401.
Lisson. ornith. p. 621. Rep. 1838 p 61. Keys 273. 9). Schinz p 3
Schlegel. Rev. crit p. 129

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web of first primary black; inner webs of the others somewhat hoary, with well defined white spaces. Tail white, different from the back, its lateral feather moderately produced (average 6 inches in length); its outer web grayish-dusky, inner white. Legs moderate; length of tarsus about .80 of an inch; light vermilion-red. Length of tarsus, middle toe and claw 1.75 inches.

S. macroura.—Bill (average) 1.30 along culmen; depth at base .30; slender. Bill wholly deep carmine-red. White space between eye and cutting edge of upper mandible narrower than in *hirundo*. Under parts decidedly plumbeous, extending from vent to throat, both of which become abruptly white. Primaries as in *hirundo*. Tail with the elongation of *Forsteri*, or rather exceeding it (average 7.50 inches), and the color of *hirundo*. Legs very short and slender; length of tarsus (average) .65 of an inch; deep vermilion, almost lake. Length of tarsus, middle toe and claw, about 1.50 inches.

Comparison of the young of the year of S. Forsteri and hirundo.—The bill and feet constantly present differences proportional to those which exist in the adults, as regards length and stoutness. The bill of *hirundo* is more decidedly yellowish at the base of the lower mandible than in that of *Forsteri*; and the feet are clear yellow instead of being tinged with dusky. The mottled and variegated crown and upper parts are much the same in both; and the markings of the quills quite identical. The tail, however, differs remarkably. In *hirundo* the outer webs of all the feathers are dusky-gray. In *Forsteri* the reverse is the case. The difference is even more marked than in the adults.

There is little to be said with regard to the bibliography of this species. In 1831 Swainson and Richardson describe it, calling it *S. hirundo*, but noticing the discrepancies which exist in the tail and feet. In 1834, Nuttall seizes upon these differences in a note under *S. hirundo*, and suggests for the species the name of *S. Forsteri*, in the event of its proving distinct. The citation "*S. hirundo*, Rich., nec Linn.," is, I believe, the only synonym of this well-marked species, unless, indeed, it be necessary to refer to it the two preceding species.

I append the detailed measurements of several specimens of this species, which will serve to show within what limits it varies in size and proportions.

Cat. No.	Locality.	Sex.	Wing.	Tail length.	Depth of fork.	Bill length.	Height at base.	Tarsus.	Middle toe and claw.
24274	New Jersey.	♂	10.00	6.90	4.00	1.65	0.40	0.94	1.15
12692	" "	×	9.50	7.70	5.00	1.58	0.40	0.91	1.10
11624	" "	×	10.10	6.75	3.60	1.64	0.40	0.90	1.15
4928	Florida.	♀	10.30	5.00	2.30	1.50	0.35	0.95	1.14
.....	"	×	9.75	7.00	4.10	1.60	0.40	0.95	1.05
9973	Sac Valley.	♂	9.70	6.90	4.00	1.56	0.40	0.90	1.10
13473	Utah.	♂	9.70	7.70	4.70	1.56	0.40	0.93	1.08
.....	California.	×	10.30	7.20	3.70	1.55	0.38	0.99	1.15
4317	Louisiana.	×	10.20	6.60	3.55	1.54	0.35	0.90	1.08

STERNA HIRUNDO Linn.

Hirundo marina, Ray, Syn., p. 131.

Sterna major, Brisson, Ornithologie, p. 123.

Sterna hirundo, Linnæus, Syst. Nat., i. 1766, 227; et auct. Fab. Fabric. et Rich. exceptis.

Hydrocecropis hirundo, Boie, Isis, 1844, p. 179.

?*Sterna fluviatilis*, Naumann, Isis, 1820, fide Temm.

Sterna marina, Eyton, Cat. Brit. Birds, 1836, p. 55.

Sterna Wilsoni, Bonaparte, Comp. List., 1838, p. 61, et auct. Amer. recent. = *S. hirundo ex America*.

"Great or Common Tern," Latham and English authors. "Hirondelle-de-1862.]

mere pierre-garin," Buffon and French authors. "Gemeine, oder Rothfüssiger Meerschwalbe," Bechstein, Meyer and German authors. "Wilson's Tern," Bonaparte, and most later American authors.

Habitat.—Sea Coasts of Europe, part of Asia and America, ascending rivers and bays to a considerable distance.

This species has been so long known that any description of its characters, or changes of plumage are unnecessary. Temminck says that the adults in winter do not lose the black of the crown, "elle est seulement plus terne." If this be so, the species forms an exception to the general rule among Terns, that at this season the front becomes nearly white, the crown variegated with black and white, or the black still further reduced to a circumocular fascia.

Comparisons of this species with *S. Forsteri* and *macroura*, its most intimate allies, will be found under the head of the former.

The common Terns of Europe and America were considered identical by all writers up to the year 1838. At that date they were separated by Bonaparte; and American authors, with the exception of Audubon, have generally followed his example. I am little pleased to be obliged to refer to a European species, an American bird which has been judged distinct by high authority, but such a procedure seems unavoidable in the present instance. I am not aware that any distinctive characters have ever been assigned to our bird. Bonaparte, in instituting the species, gives no description, as, indeed, is the case with several other species founded in the same work, with regard to which he appears to have relied, for means of separating them from their European allies, rather upon some theory of geographical distribution, than upon any discrepancies presented by the birds themselves. I have very carefully compared a series of skins from both continents, and neither in size, form or color, have I been able to detect the slightest differences; and consequently, until some one is more fortunate than myself in detecting valid specific characters, I must refer the American bird to the old Linnæan *S. hirundo*.

Below are offered the detailed measurements of five American and European birds, taken at random from a large series. It will be observed that in no respect do the dimensions of the birds from the two continents present greater differences than are found in the various examples from either.

A.—*S. hirundo ex Europâ.*

Cat. No.	Sex.	Locality.	Wing.	Tail.		Bill.		Tarsus.	Middle toe and claw.
				Outer feather.	Depth of fork.	Length.	Height at base.		
9559	♀	Europe.	10·30*	5·70	2·65	1·38	0·33	0·81	0·97
24280	♀	Holland.	9·80	5·60	2·60	1·51	1·31	0·78	0·90
21680	♀	Hungary.	10·80	6·20	2·70	1·45	0·36	0·80	0·90
23444	♀	"	10·60	5·90	2·70	1·45	0·32	0·84	0·96
23445	♀	"	10·80	6·50	3·00	1·35	0·31	0·80	0·90

B.—*S. hirundo ex Americâ.*

Cat. No.	Sex.	Locality.	Wing.	Tail.		Bill.		Tarsus.	Middle toe and claw.
				Outer feather.	Depth of fork.	Length.	Height at base.		
18224	♀	Labrador.	11·00	6·50	3·10	1·50	0·32	0·84	0·98
22287	♀	Massachus'tts	10·40	5·90	3·02	1·41	0·31	0·78	0·93
1149	♀	Cape May, N.J.	10·60	6·40	2·85	1·36	0·31	0·78	0·93
20811	♀	Hudson s Bay	10·40	5·90	2·85	1·50	0·32	0·78	0·95
12474	♀	Utah.	10·50	6·00	2·50	1·51	0·35	0·80	0·95

* Inches and hundredths.

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- Sterna macrura Naumann. Zeits. v. Orn. 1819. XII, p. 1847
- Sterna macrura Naumann N. Vgl. 1840 ~~Id.~~ p. 114, pl. 283.
 Keys. et Bds. 1840 p. 97, Schlegel, Rev. 1844 p. 129.
- S. argentata, Brehm, Beiträge. 1822, III p. 692. (Naumann)
- S. arctica, Eulw. Hist. Natur. Brit. Birds, 1836 p. 68.
~~Illustration~~ Synopsis. 1839 p. 319.
- Sterna brachyura Gmel, Reise Nach. Harde, p. 218.
- S. argentata, Brehm. Lehr. Naturg. Eur. Vögel, 1823. p. 689.
- S. arctica, Mac. Bnt. Bds V, Man. orn. II 1842 p. 232
 Lesson miltu. 1831, p. 621; Schinz 1840 p. 373.

They have been separated by Bp.
 in Comptes Rendus XLII 1856 p. 772

For a species so long known, the present has remarkably few synonyms. That of *S. Wilsoni* is the one which has been most firmly established. I quote *S. flaviatilis* with a query on the authority of Temminck. This author, and also Degland, unhesitatingly refer it to the present species, while by some very recent authors* it is regarded as distinct. Eyton, in calling the bird *S. marina*, derives his authority for the specific name from the *Hirundo marina*, of Ray's Synopsis, p. 131. Brisson's *Sterna major* probably also refers to this species, but though both these latter names have priority over Linnæus' appellation, they are to be disregarded, as neither of their authors were binomialists.

STERNA MACROURA Naumann.

Sterna hirundo, Faber, Prod. 1822, p. 88. Fabricius, Faun. Grœnl. 1780, p. 105. Nec Linn. nec Richards.

Sterna macroura, Naum., Isis, 1819, p. 1847. Degland, Ornith. Europ. 1849, p. 344. Lawrence, Gen. Rep. Birds, 1858, p. 862.

Sterna arctica, Temm., Man. Orn. 1820, ii., 742, et auct. pleriq.

Sterna nitzschii, Kaup, Isis, 1824, p. 153, secundum Gray.

? *Sterna brachytarsa*, Graba, fide Gray.

DIAG.—*St.* rostro gracile, rubro; pedibus brevissimis, rubris; corpore toto cærulescente-plumbeo, subtus dilutius; caudâ, uropygio, tectricibusque caudalibus inferioribus albis; rectrice laterali valde elongatâ, pogonio externo griseo-fusco.

Habitat.—Europe. Atlantic Coast of North America from Massachusetts northward. Interior of Arctic America, (Hudson's Bay, Great Slave Lake.) Semi-arine Straits.

Examination of a very large series of this species shows it to be subject to great variations in some respects. These are especially noticeable in the bill and tail. The largest bill in the series measures 1.40 inches along the culmen; the smallest (from Nova Scotia) only 1.08,—the difference being over .30 of an inch. The average length of bill is about 1.30. The tail varies in length quite as remarkably, the difference between two equally adult individuals being more than $1\frac{1}{2}$ inches. The color of the bill is pretty constant,—a uniform deep lake. Sometimes, however, it acquires a dusky tip, but never the decided black space which exists in *S. hirundo* and *Forsteri*. The bill is much smaller, and every way more delicately shaped than in those species. The under parts are nearly uniform in color. This is very decided, scarcely if at all lighter than the back, (very different from the slight wash of *hirundo*,) and extends in full intensity quite from the throat to the vent,—the under tail coverts being pure white, in marked contrast. The under surface of the wings do not share the general color of the body, but are pure white. The feet are exceedingly short, and hardly vary appreciably. Their color is carmine, not so deep as the bill, but still not of the vermilion or coral red of those of *hirundo*.

The distinctive features of this species and the *S. hirundo*, will be found under the head of *S. Forsteri*. They are so many, and so well marked, that it is difficult to conceive how the two species were ever confounded. The differences between it and *S. Pikei*, the next most closely allied species, are given under the head of the latter. There is no other North American species with which the present requires comparison.

I have carefully examined a large series of examples from both continents, and have been unable to detect the slightest discrepancies. (This is one of the species of which, so far as I am aware, American and European specimens have never been separated by any writer.)

Temminck's name of *arctica* has until recently been very generally applied to this bird; but that of Naumann must supersede it. Temminck admits that Naumann named the bird *macroura* before he called it *arctica*, but insists upon

* Des Murs, Traite Générale d'Oologie Ornithologique, p. 551.

the adoption of his name upon the following grounds: "Le nom de *macroura* ne convient point à ma *St. arctica*; elle a seulement une queue un peu plus longue que *St. hirundo*, tandisque nous avons en Europe et à l'étranger des Sternes à queue très longue, et que *St. Dougalli* a une queue extraordinairement longue, dépassant les ailes souvent de plus de deux pouces." The fact, however, of there existing other Terns with tails as long or longer than the species to which the name *macroura* was applied, would hardly be recognized by ornithologists as a valid excuse for setting aside a prior designation. Temminck's description is very accurate, but the dimensions given, ("13 pouces 6 ou 8 lignes") is considerably below the average.

I regret that I have never seen the immature or winter plumage of this species; the more so, since, so far as I can discover, no description of these stages has been given by any American writer. They were unknown to Temminck. Degland* says that the winter plumage differs from that of summer only in the black of the crown being variegated with white. The same author describes the young before the first moult as resembling those of *S. hirundo*; but being a little smaller, the tarsus notably shorter, the bill slenderer and brown, with the base and cutting edge of the mandibles yellowish red. His description in other points does not differ materially from *S. hirundo*.

Degland also speaks of the occurrence of a hybrid of this species, and the *S. hirundo*, partaking in a varying degree of the characters of either parent. Though I have never met with a specimen which I could not unhesitatingly refer to one or the other species, it seems not at all improbable that hybrids should really occur.

The *Sterna hirundo* of the authors quoted in the synonymy undoubtedly refers to the present species. Though in the description of *S. nitzschii* of Kaup there are some discrepancies, I follow Gray in assigning it as a synonym. I have never had an opportunity of examining *S. brachytarsa* of Graba, but quote it entirely upon the authority of Gray.

STERNA PIKEI, Lawrence.

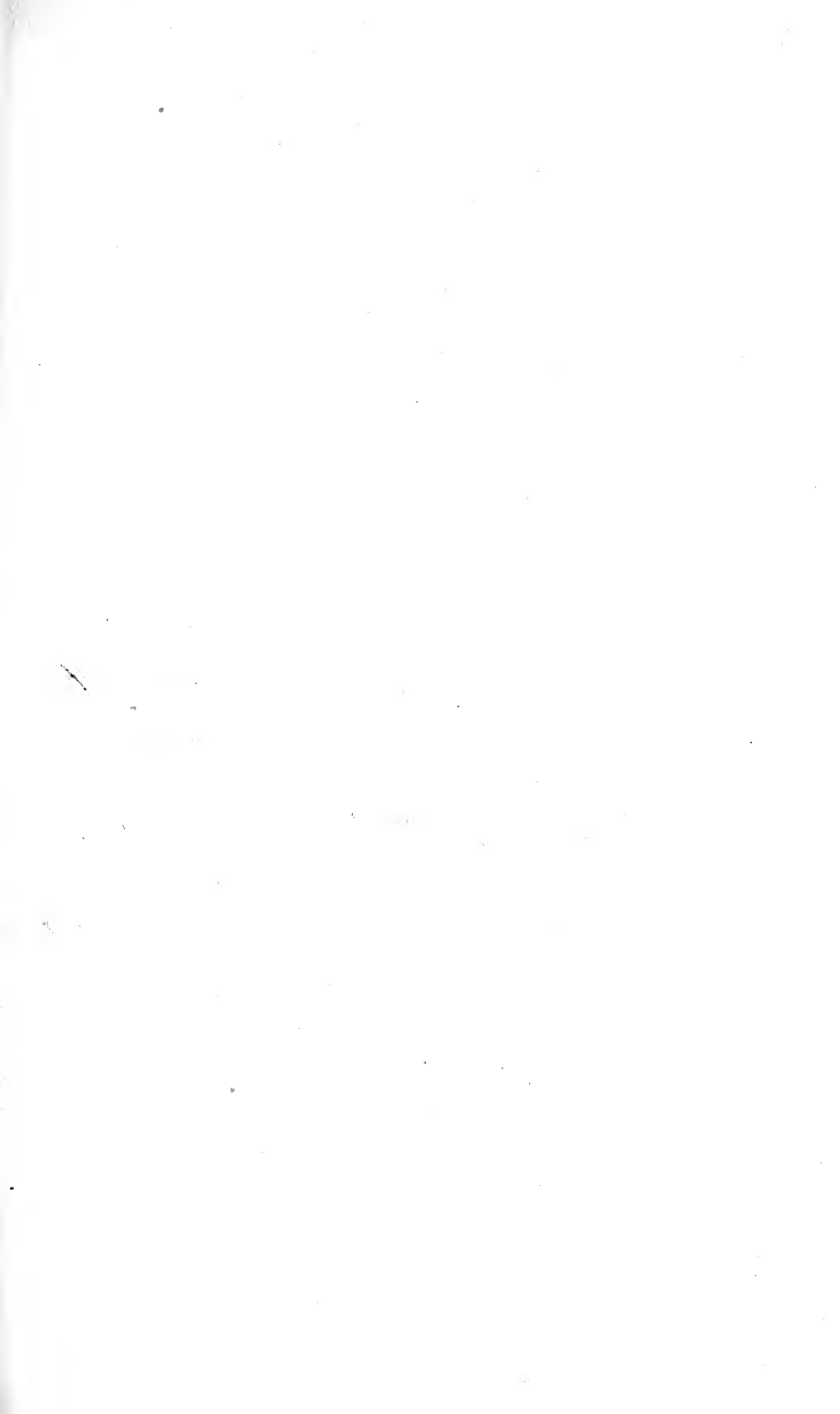
Sterna Pikei, Lawr. Ann. N. Y. Lyc. N. H., vi. 1853, 3. Id. Gen. Rep. Birds, 1858, 863. Atlas, pl. xcv.

DIAG.—(*Adultus, vestitus hyemali*?) S. rostro tenue, fuscесcente-rubro; fronte albo griseoque variegato; occipite nigro; dorso alisque griseo-cœrulescentibus; uropygio albo; caudâ valde elongatâ, forficatâ, rectrice laterali pogonio externo fuscâ; corpore subtus albo; pedibus rubris.

Habitat.—Coast of California.

I have before me the type of *Sterna Pikei*, the original of Mr. Lawrence's descriptions (l. c.) obligingly furnished by that gentleman for examination. This specimen, the only one known to exist in any cabinet, is unfortunately in immature or winter plumage, and in rather poor condition. The species is a very strongly-marked one, differing widely from any other of North America, not only in colors, but in form and proportions. In size it is considerably smaller than *S. macroura*, the wing being one inch or more shorter than in the average of that species; the tarsi and toes a very little less. The bill measures 1.12 inches; it is remarkably slender, its height at base being only .25 of an inch—just about equal to that of *antillarum*. The color is quite undefinable in the specimen before me, but, as remarked by Mr. Lawrence, is probably deep carmine in life. The whitish front, becoming more and more mixed with grayish black towards the occiput, together with the plumbeous lesser wing coverts, are evidently those of an immature bird, probably of its first winter. The black of the occiput is quite pure, and extends on the sides of the head far enough to embrace the eyes. The marking of the primaries and secondaries are precisely those of *S. macroura*, and the color of the back and wings is much the same.

* Ornith. Europ. 1849, ii. p. 345.



Sterna Dougalli Naumann N. V. d. 1840. p. 78 pl. 251; vol. X.

N. V. d. 1840. p. 304. pl. ex. v. 18 p. 280

Sterna Dougalli Vieillot Gal. ois. 1834, h. 225, pl. CCXC.

Induction Syn. p. 320

Vuill. Dict. Vol 32 p. 38 (1819) In. Naug. p. 899.

Lissoni Orn. 621. Schleg 1840 † p. 372.

Bp. 1838, p. 61. Temm. II 1820 p. 738.

St. paraisien, Kays. Blas. 1840 † p. 97. — Schleg, Rev. Crit. 1844 p. 930
Desf. p. 346

The tail is very long. I do not mean, however, that the lateral tail feathers are greatly produced, as in *macroura* and *paradisea*, (though that is not improbably the case in the summer plumage) for the depth of the fork is not greater comparatively, than in *hirundo*; but the whole tail is produced, the central feathers being absolutely as long as in *macroura*, which is a larger bird. The outer web of the lateral tail feather is very dark colored,—even more so than is that of *macroura*,—and the outer webs of the other feathers are shaded with grayish; but in the adult it is probable that the colors will be the same with those of the last-named species. A striking feature of *Pikei* is the pure white of the whole under parts, of the rump, and of the neck behind between the black pileum and the back, there being not the slightest trace of the plumbeous wash, so conspicuous in *macroura*, *hirundo*, etc. The species in this respect agrees with *S. paradisea*, and, like that species, may perhaps, during the breeding season, acquire a rosy tint on the under parts.

I regard this species as intermediate between *S. macroura* and *paradisea*, though most closely allied to the former. In the foregoing remarks the differences between the two have been pointed out. With the latter—*S. paradisea*—it agrees in several particulars: slenderness of bill, color of under parts and of feet, &c. It is at once to be distinguished by its much darker colored upper parts, different markings of primaries, pure white rump, slenderer and smaller bill and feet, greater elongation of central tail feathers, &c.

The acquisition of perfect specimens of various stages of this interesting Tern, of whose changes of plumage we can only judge by analogy, and with whose habits we are entirely unacquainted, is a particular desideratum in North American Ornithology.

STERNA PARADISEA Brünn.

Sterna paradisea, Brünnich, Orn. Bor. 1764, p. 46, and of recent authors. Lawrence, Gen. Rep. 1858, 863.

Sterna Dougalli, Montagu, Orn. Dict. Suppl. 1813, and of most authors, including Audubon and Nuttall.

Sterna Macdougalli, Macgillivray, Man. Orn. ii. p. 233.

Thalassæa Dougalli, Kaup.

Hydrocecropis Dougalli, Boie, Isis, 1844, p. 179.

DIAG.—(nupt. temp. ad.) S. rostro tenue, nigro, basin versus rubescente, pedibus rubro-aurantiis; caudâ longissimâ, valdè forficatâ, fere albidâ, remigibus omnibus internè albo-marginatis ad apices ipsas; corpore suprâ perlaceo, subtus rosaceo-albo.

Habitat.—Atlantic coasts of Europe and America.

In a number of equally adult examples, I find that the color of the bill varies; in most the black extends nearly or quite to the base, in others fully the basal third of the bill is reddish. The extreme points of both mandibles are yellowish. The color of the mantle is lighter than that of any other species; the tail, exceedingly long and tapering, is of so light a pearly blue as to be almost white. A most striking feature of coloration of this species consists in the well-defined, broad white inner margins of all the primaries extending quite around the tips of the feathers, on to the outer webs on the first and second primaries. Immature and winter specimens have the bill brownish black; the front white; the crown and nape dull black, variegated with white. The lateral tail feathers want the great elongation and attenuation they acquire during the breeding season, the tail being no more deeply forked than that of *Forsteri*, or even of *hirundo*.

This species is so distinct in characters, that a comparison with any other is needless.

The American bird has never, I believe, been separated from the European. The specimens I have compared appear identical in every respect.

1862.]

STERNA ANTILLARUM Coues ex Lesson.

Sterna minuta, Wilson, 1813; Bonaparte, 1828; Audubon, 1838; sed non Linnaei, 1776.

Sterna argentea, Nuttall, Man. Orn. 1834, ii. 280; sed non Princip. Maxim. quae species Braziliensis.

Sterna frenata, Gambel, Pr. A. N. S. Ph. 1848, iv. 128.

Sternula antillarum, Lesson, Descriptions de Mammifères et d'oiseaux récemment de couverts, &c., Paris, 1847, p. 256. Adultus.

Sternula melanorhyncha, Lesson, op. et loc. cit. Juvenis.

DIAG.—*S. Sternæ minutæ* similis, ejusdemque staturæ; sed rostro brevior et valde graciliore, vittâ frontale angustiore, dorso, uropygio, caudâque suprâ coloribus, cœrulescentibus-perlaceis.

Habitat.—Atlantic coast of North America, from Labrador to Texas, and ranging further south into the Antilles. Great lakes and rivers of interior of North America. Not on the Pacific coast?

The bill of this species, as usual in the subfamily, varies somewhat in length; but the longest bills before me do not equal the shortest of the European bird. The slenderness of the bill, which is very marked in comparison with its transatlantic congener, is constantly preserved. The black tip of the bill, usually from one and a half to two-tenths of an inch in length, is sometimes reduced to a mere point; but it is very rarely wanting altogether. The white frontal lunula varies within narrow limits, probably widening somewhat with increasing age; but it never, I believe, attains the ordinary breadth of that of the European. The neck behind, between the black pileum and the back, is a somewhat lighter shade than the latter, but the difference is scarcely noticeable. The pearl gray of the back and wings extends unchanged on the rump, upper coverts, and the inner tail feathers quite to their tips; but the outer vanes of the lateral tail feathers, and their bases, are white. As described by most authors, the two outer primaries in the great majority of adult spring birds are black, their shafts white, their inner webs broadly bordered with white, except toward the tips; but specimens frequently occur which have the three or four outer primaries of this color. This is, without doubt, merely a seasonal feature, and one quite independent of sex or age; for all the specimens bearing this character of primaries are adult birds, labelled as having been taken in July and August. At this season of the year they have finished the duties of incubation, and are about to put on the perfect winter dress, as the ragged and dilapidated condition of their plumage testifies. It is well known that allied species of Terns, such as *S. hirundo*, *Forsteri*, etc., towards the close of the summer, at the approach of the moult, entirely lose the delicate silvery hoariness with which the primaries are glossed over during the breeding season—these parts becoming of a plain, dull, brownish tint. The change in the present species is precisely analogous.

The young of the year, taken in July and August, differ greatly from the adults. The bill, though as stout at the base, is much shorter, less acute at the tip, and wants the sharply-defined angle at the symphysis. It is brownish black, the base of the under mandible dusky flesh color. The forehead is mostly white. The crown and occiput are variegated with brownish black and white, the former color mostly aggregated into a postocular patch. The back and wing coverts are lightly washed over with the pearl gray of the adults; but this color is greatly obscured, and its continuity interrupted by dark brown crescentic or hastate spots, one or more on each feather, which give the upper parts a mottled appearance. The primaries are all grayish black, growing successively lighter, and more and more glossed with silvery, from without inwards; the inner webs of all bordered with white. This white is broadest on the outer primary, but falls considerably short of the tip; it grows narrower, but at the same time longer, on the others, until on the inner ones it goes quite around the tip to the

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S. argentea DeKay NY. F. 305. pl. cxxiv fig. 273

S. minuta Bk. Am. Lyc. NY. p. 355 Vol. II
Audubon Sep. p. 821

outer web. The tail is not deeply forked, but simply emarginate, the difference being about that which attains between the adult and young of *Hirundo horreorum*. I have never seen it of quite the shape figured by Audubon; but in his plate it is very accurately colored.

This species is so very distinct from *S. minuta*, that it is a little singular that they should ever have been confounded. The following are the

Differential Diagnoses of the American and European birds.

S. minuta.—Bill along the culmen 1.20 inches, height at base .27; width of frontal lunula .40. Rump, upper tail coverts and tail pure white, in marked contrast to the pearl blue of the back and wings.

S. antillarum.—Bill along culmen 1.05 inches, height at base .25; width of frontal lunula .30. Pearl blue of upper parts continued uninterruptedly on to the rump, tail coverts and tail.

These differences are all I can discover between the two species; quite enough, however, to permanently separate them. Nuttall states that the "Silvery Tern is about 9½ to 10 inches long; the European species 8 to 8½ only." It is difficult to determine the exact length of a species from dried skins; but in this case it is certain that no such difference exists. In fact, judging from the wings and tarsi,—parts which do not change in dimensions in drying,—the two are nearly or quite identical in size; and I am sure that the difference, if any, is not greater than is found between individuals of either species. Both appear to range from eight to nine inches in length. I cannot appreciate the difference in the color of the upper parts mentioned by Nuttall.

But, while our pretty little Tern thus rejoices in unimpeachable claims to specific distinction, it has not been equally fortunate in retaining for any length of time undisputed possession of a title of its own. By the earlier writers on North American Ornithology it was confounded with the European bird, and called *Sterna minuta*, Linn. Nuttall, in 1834, was the first to vindicate its claims to specific distinction from its European analogue. This author, however, while he gives correctly enough its essential characters, commits the grave error of referring it to the Brazilian *S. argentea* of Prince Maximilian,—quite a different bird. Nuttall appears to have made the mistake in this wise. He evidently never examined a specimen of *S. argentea*; for he says, "That our bird is that of Brazil we have no further evidence than the slight notice of Temminck." Now Temminck's* remark is as follows: "Cette espèce,"—*S. minuta*,—"est absolument la même dans l'Amerique septentrionale. Les voyageurs au Brésil ont aussi trouvé dans ces contrées une petite hirondelle-de-mer modelée sur les formes de la nôtre. Mais elle forme une espèce distincte, bien caractérisée par son bec plus robuste, qui est entièrement d'un beau jaune clair; les distributions des couleurs offrent aussi quelques disparités. Le prince de Nieuweid indique cette espèce sous le nom de *Sterna argentea*. Voy. v. i. p. 67." With only this brief indication to guide him, and impressed with the different distribution of the colors of the upper parts of *S. minuta* and *antillarum*, Nuttall might readily overlook the discrepancies mentioned in the size of the bill, and in this manner refer the American bird to the Brazilian.

In the Proceedings of the Philadelphia Academy for 1848, Dr. Gambel points out the distinctive features of the present species and the *S. argentea*, and our bird being thus left without a name, he applies to it the exceedingly appropriate one of *S. frenata*, by which it has been known from that date up to the present time. I am therefore very reluctant to supersede it by any other; but the *Sternula antillarum* of Lesson undoubtedly refers to the present species, and has priority in point of date. Lesson's description (vide op. cit.) is essentially as follows: "Differs from *S. minuta* in its shorter bill, of orange color, tipped with black; the white frontal band narrower. Two outer quills bordered with

* Man. d'Orn. vol. ii. p. 753.

black; tarsi orange. Lives on the banks of the Guadalupe." Here, it will be noticed, that though the characters are so brief, the peculiar features of bill and frontal lunula are given with such precision, that there can be no doubt of the propriety of referring the description to the species now under consideration.

Immediately following the description of the *S. antillarum*, there is instituted (l. c.) a *Sternula melanorhyncha*, Less., with substantially the following characters: "A little stouter than the preceding; differs from it and *S. minuta* in the straight and black bill. The white front of small extent. Black of head above extends to middle of neck. Black of sinciput mixed with white; lower neck white above, the gray of the upper part of the body washed with brownish. Tail short, little forked; the lateral feathers tipped with slender filaments. Tail pale grayish white, the outer quills broadly margined with brown." It is evident from almost every paragraph of this description, more particularly the mention of the black bill, the sinciput mixed with white, and the upper parts washed with brownish, that Lesson had in view an immature or winter Tern. The habitat given is the same as that of the preceding,—*antillarum*,—and I have but little doubt that the description is that of the young bird of the species now under consideration, in which the characters are almost exactly as given by Lesson. Indeed, a specimen before me agrees exactly with the description, even to the lateral tail feathers tipped with slender filaments,—said filaments being the termination of the shaft of the feather, from which the web has been worn away. I therefore quote *Sternula melanorhyncha*, Less., as a synonym of the present species.

Genus HYDROCHELIDON Boie.

Hydrochelidon, Boie, Isis, 1822, p. 563. Type *S. nigra* Linn.

Viralva, Leach, Stephen's Zool. 1826, xiii. p. 166. Same type.

Pelodes, Kaup, Sk. Ent. Eur. Thierw. 1826, 107. Type *Sterna leucopareia*, Natterer.

CH.—Bill a little shorter than the head, longer than the middle toe and claw; very delicate, slender, acute; culmen and commissure decidedly declinato-convex, the amount of curvature increasing towards the tip; outline of rami and gonyes both concave, the former most so: the angle separating them prominent and very acute. Wings exceedingly long, pointed, of same color as back, without distinct markings on either web. Tail rather short, contained $2\frac{1}{2}$ times in the wings, only moderately emarginate, (much as in *Gelochelidon*), the lateral feathers but little exceeding the next, not tapering and acuminate; all the feathers broad and rounded. Feet slender and short; tarsi much abbreviated, rather less than the middle toe alone. Toes moderately long; the webs rather narrow, and very deeply incised. Size small, general form delicate; colors mostly black, the wings and tail plumbeous.

A genus distinguished from *Sterna* proper chiefly by its very slender attenuated bill, with its decurved tip: its short tail, of a very different shape; its deeply incised interdigital webs and its very peculiar style of coloration. Other differences, however, will be noted in the preceding diagnosis. North America contains but a single representative,—the young of which was described by Wilson as *S. plumbea*, but which is in all probability identical with the well-known European *H. fissipes*. Other closely-allied species of Europe are the *H. nigra*, (of Linnæus=*H. leucoptera* of most authors), and *H. hybrida* (of Pallas=*H. leucopareia* of most authors.)

The principal synonym of *Hydrochelidon* is *Viralva* of Leach, (1826,) based upon the same type. *Pelodes* of Kaup, 1829, founded upon *H. leucopareia*, is also strictly a synonym of *Hydrochelidon*.

HYDROCHELIDON FISSIPES G. R. Gr. ex Linn.

Sterna fissipes, Linn. Syst. Nat. i. 1766, 228. Not of Pallas.

• †Dec.

S. *gaspes* Schaeffer. Mus. ornith. 1779 p. 65.
" *niacra* ^{in p.} de as as de p. 66
S. ~~niacra~~ Aud. Lyn. p. 320

St. nigra Brouss. ornith. VI p. 211, No 11, pl. 20; fig. 1

"Bris." Naumann. N. V. D. p. 189 pl. 256.

— Linn. Fn. succ. 159

Petrijus Fn. succ. 1800 p. 164.

Meloon orn succ. II p. 160

St. obscura? ~~Linn~~ Gmel. Cat. 1788, 1, pars 2. 608, No 20 (Kaun)

St. naeva, Gm. p. 609 No. 5. St. naeva, Biss. VI p. 217, pl. XX f. 2

St. Boylii Var B. Lath. Ind. p. 806, No 10.

"Rallus lariformis", ^{127 Gmel. ann. i No 156} Linn. S. N. Edit X. i p. 153 Kaun.

St. fissus Lath. 1790 page 810. Gm. p. 610. Brouss. No. 153.

St. obscura Lath. page 810 Ogland, orn. p. 1349

St. nigra DeKay Myx. p. 300, pl. CXXVI, figs. 278-278A.

Macg. Brit Bot V. Man. orn. II 1842 p. 233

Meyer u. Wolf, Taschen. Deut. 1810 II p. 461.

Linnaeus Med. 1820 II p. 749. Linn. ornith p. 1622

Vuelt. Dict. 1819. Vol. 32 p. 170. Fr. Trans. II 00.

Key. et Blas. 1840 p. 98. Schurz, p. 375. Schlegel, p. 30.

Hydrochelidon fissipes, G. R. Gray. Gen. Birds, iii. 1849, 660.

Sterna nigra, Brisson, and of authors. Not of Linn.

Hydrochelidon nigra, Boie, Isis, 1822, p. 563.

Viralva nigra, Leach, Steph. Gen. Zool. 1826, xiii. p. 167.

Sterna nevia, Linnæus, S. N. i. 1766, 228. Young.

Sterna plumbea, Wilson, Am. Orn. vii. 1813, 83, pl. lx. Young.

Hydrochelidon plumbea, Lawrence, Gen. Rep. 1858, 864.

Habitat.—Europe. North America generally, both on the sea-coast, and in the interior.

This species in all its changes of plumage is too well known to require any descriptions.

I have critically compared quite a series of European and American specimens, in all stages of plumage, but have been entirely unable to detect the slightest discrepancies between the birds of the two continents. The specimens before me are all absolutely identical in size and relative proportions of different parts; and the colors of those of the same age correspond minutely. There do not appear to exist the slightest characters upon which to base specific distinction.

The first distinctive name applied to the American bird was *plumbea*, of Wilson, based upon the immature bird, he probably, however, not recognizing it as the young, or desiring to separate it from the European species. The birds of the two continents were first formally separated by Bonaparte, in 1838, in his Comparative List, and his example has been followed by the majority of subsequent American authors.

To G. R. Gray, I believe, is due the credit of elucidating the synonymy of this, as well as of the other species of the genus, which was in a state of great confusion. The proper name of the present species appears to be *fissipes*, Linn., the name *nigra*, Linn., usually applied to it, really referring to the white-winged black Tern of Europe, of which *leucoptera* is the most firmly established synonym. Mr. Gray has also shown that the proper name of the whiskered Tern usually given as *leucopareia* Natterer, is *hybrida* of Pallas.

Genus HALIPLANA Wagler.

Onychoprion, Wagler, Isis, 1832, p. 277. Type *S. serrata*, Forster.

Haliplana, Wagler, Isis, 1832, p. 1224. Type *S. fuliginosa*, Gm.

СН.—Bill as long as the head, but little less than the tarsus and middle toe together, perfectly straight, stout, especially at base, where it is nearly as broad as high, tip rather acute. Culmen but very slightly convex; gonys about straight, so ascending as to make the commissure nearly straight; rami slightly convex, the prominence between them and the gonys illy developed, not acute. Nostrils somewhat more anterior than in *Sterna*, not nearly so much so as in *Anous*, in a decided, but rather irregularly-defined sulcus, which terminates a little beyond the middle of the bill in several longitudinal striæ. Outline of feathers at base of bill much as in *Sterna*. Wings exceedingly long, pointed, but the first primary scarcely surpassing the second. Tail very long, deeply forked, the feathers broader and stiffer than in *Sterna*, not so regularly tapering, but still quite acuminate at their tips. Legs rather long for this subfamily: the length chiefly apparent by a greater denudation of the tibia. Toes rather short; the middle with its claw exceeding the tarsus but slightly. Size moderate; general form slender and graceful. Bicolor.

A genus distinguished from *Sterna* by several important characters. In the shape of the bill, position of nostrils, proportions of primaries, color to some extent, there is an evident approach to *Anous*. It is, however, decidedly to be referred to the typical *Sternæ*, rather than to the *Megalopteræ*.

Wagler's *Onychoprion* is based upon the *S. serrata* of Forster; while his *Haliplana* has as type *S. fuliginosa*, Gm. The former of these species—*S. serrata*—1862.]

is in all probability identical with *fuliginosa*, and is at all events strictly congeneric with it. This being the case, perhaps *Onychoprion* ought to be employed for the genus; as it is instituted several pages in advance of *Haliplana*. But, as the conflicting names are by the same author, and bear the same date, I have preferred to adopt *Haliplana*, which, besides being based upon the old and well-known type *fuliginosa*, has the merit of being much more euphonic.

HALIPLANA¹ FULIGINOSA Wagl. ex Gm.

Sterna fuliginosa, Gml. S. N., 1788, i. 605, et auct.

Haliplana fuliginosa, Wagler, Isis, 1832, p. 1224.

Onychoprion fuliginosa, Gould, Introd. B. aust., 1848, 113.

Sterna serrata, Forster, Descrip. Anim. 1844, 276. Adult.

Onychoprion serrata, Wagler, Isis, 1832, p. 277.

Sterna oahuensis, Bloxham, Voy. Blonde, 1826, p. 251. Fide Cass.

Sterna guttata, Forster, Descript. Anim. 1844, p. 211. Juv.

Anous l'herminieri, Lesson, Descr. de Mammifères et d'oiseaux, &c., 1847, p. 255. Juv.

DIAG.—H. bicolor, corpore suprà, rostro, pedibus, remigibusque nigris; corpore subtus, fronte et rectrici laterali nisi apicem versus, albis.—(*Adultus*).

Minor; rostre graciliore; caudâ minus forficatâ; corpore toto brunnescente-nigro, subtus dilutiore, abdomine tectricibusque caudalibus inferioribus griseo-albis; tectricibus alarum latè albo-terminatis.—(*Juvenis*).

The plumage of the young of the year of this species differs so remarkably from that of the adult, that I have above contrasted the diagnoses of the two ages. While the plumage of the adult is well known, a description of that of the young may not be here out of place.

(*Young of the year*.)—The bill is much smaller and weaker than that of the adult; its upper mandible black; its lower, together with the eyes and feet, are dusky red. The whole body is a uniform brownish or fuliginous black,—this color deepening on the primaries, growing lighter on the under parts, until on the abdomen and under tail coverts it is dull grayish white. The wing coverts and scapulars are all broadly tipped with white, giving a very marked spotted appearance to the parts. The feathers of the back, rump and upper tail coverts are narrowly margined with dull rufous, which gives a transversely waved appearance to the parts. The tail is uniformly of much the color of the wings: all the feathers at their extreme tips fading into light brown.

The above description is taken from a bird in the collection of the U. S. Exploring Expedition, under Captain Wilkes, U. S. N., taken at Hendin Island. It is labelled "*S. fuliginosa*, Gm. juv.," by Mr. Cassin. I have carefully compared the series of adults in the same collection, and cannot find that they differ in the least from specimens from the West Indies and Southern States.

Upon the above-described state of plumage of *Haliplana fuliginosa* is based, I take it, the *Anous l'herminieri* of Lesson. ("Descriptions de Mammifères et d'oiseaux récemment découverts," 1847, page 255.) A condensed translation of this author's description is as follows: "Length 24 cent. Bill black above, red on the lower mandible; tarsi red. Plumage uniform dusky black beneath, the lower belly and under tail coverts white, washed with gray; above blackish brown, dark and uniform on the head and neck, enamelled with transverse white spots on the greater wing coverts, and rayed with rufous on the back, rump and wing coverts." It will be seen that this description corresponds in the minutest particulars, which render it but little if at all doubtful, what bird he had under consideration. His specimens came from the Antilles near the Guadalupe.

I have also quoted, as a synonym of the young, *S. guttata* of Forster. This author (loco citato) says: "*S. caudâ forficatâ corpore fuliginoso, dorso tectricibusque albomaculatis, pedibus nigris*,"—and a part of his further description is: "*Corpus magnitudine circiter Sternæ hirundinis*." . . . "Corpus

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S. Julia. *Salt* page ~~80~~ 4 (1790).
Ann. Syn. p 87

Sterna alutida Linn. Ed. 10 1p 17 Genus 70 species ;
S. alutida Linn. 1766 p. 227; Gmel. page 605

omne fuliginosum; abdomine circa anum albicante; fronte fusco-cinerea." The dimensions are given as length 14 inches; bill 1.50; tarsus and toes 2.75. This description in all respects applies very exactly to a stage of plumage a little more adult than that characterized as *Anous lherminieri*, in which the under parts have become lighter, and there are signs of the white front.

Sterna serrata, of the same author (page 276), is to be referred to *S. fuliginosa*, provided the Pacific bird be the same as the Antilles and Florida, which we have no reason to doubt. I quote *S. oahuensis* on the authority of Mr. Cassin, not having an opportunity of consulting the reference.

Section MEGALOPTEREE.

If the preceding groups which have been considered as genera—and they are so held by the majority of modern writers—be really such, then the *Anous stolidus* is entitled to more than generic separation from the other representatives of the subfamily. The discrepancies in every particular of form, as well as of pattern of coloration, are very marked and decided. In the following diagnosis are given the characters which present themselves in the *Anous stolidus*; my want of familiarity with exotic forms preventing me from distinguishing with accuracy the features of the section from those that are strictly characteristic of its typical genus.

Genus ANOUS Leach.

Anous, Leach, Stephens' Gen. Zool. 1826, 139. Type *S. stolidus*, L.
Megalopterus, Boie, Isis, 1826, 980. Same type.

CH.—Bill greatly exceeding the tarsus, rather longer than the middle toe and claw, as long as the head, moderately robust, depressed at the base, where it is very broad (as broad as high), compressed in the rest of its extent, tapering to the rather acute, attenuated and somewhat decurved tip. Culmen about straight for half its length, regularly decurved towards the tip, rounded, and towards the base very broad and flat. Commissure about straight to near the tip, where it is regularly declinato-convex. Outline of both rami and gonys concave, former most so; the prominence which separates them being illy defined and not acute. Both mandibles marked with numerous more or less distinct longitudinal striæ; their cutting edges inflected. Nostrils situated far forwards, their anterior extremity nearly half way to the tip of the bill, in a deep sulcus formed by the rounded culmen and a prominent broad ridge which runs from the base of the upper mandible, along its cutting edge to beyond the nostrils, where it gradually becomes lost. Just above the base of this ridge there is a small but distinct triangular fossa, separated by an oblique stria from the large nasal sulcus. Outline of feathers at base of bill very peculiar; those on the culmen have a broadly convex outline, and reach considerably beyond the lateral feathers, which latter slope rapidly backwards with a slightly convex outline. This is the reverse of *Sterna*, in which the feathers reach far forwards on the sides of the upper mandible, and recede on the culmen to form an acute angle. Wings only moderately long for this subfamily, not very acute, the first primary scarcely surpassing the second; all the primaries slightly falcate, very broad almost to their rounded tips; unicolor. Tail exceedingly long, more than half the wing; rounded, the lateral feathers regularly much graduated; all the feathers broad at the base, tapering to their somewhat acuminate tips, their shafts stiffened. Tarsi moderately stout, exceedingly short, much less than the middle toe without the claw. Lateral toes very long, the inner especially, which is but little shorter than the outer. Hind toe well developed. Interdigital membranes very long and full, their margins even, unincised. Size moderate; general form stout; nearly unicolor; colors very dark.

ANOUS STOLIDUS (Linn.)

Passer stultus, Ray, Syn. 154, fide Leach.

1862.]

Gavia fusca, Brisson, Ornith. pl. xviii. fig. 2.

Sterna stolidus, Linn., S. N. 1766, i. 227, et auct. antiq.

Anous stolidus, G. R. Gray, Gen. Birds, 1849, iii. 661, et auct. recent.

Megalopterus stolidus, Keys, et Blas., Wirb. Eur. 1840, 98.

Anous niger, Stephens, Gen. Zool. 1826, xiii. 140.

A comparison of the Floridan bird with that from the South Pacific, collected by Wilkes' Exploring Expedition, shows some differences of color, form and size, which, though not great, are well marked and quite constant in all the specimens I have examined. The bill of the Pacific bird is of the same length as that of the American, but is higher at the base, which gives it a somewhat different shape. The toes are considerably longer, while the tarsus is of just the same length; making a different relative length of tarsus and toes. The wing is from a half to three-fourths of an inch longer; the tail is very decidedly longer, the difference being quite an inch. The central tail feathers are half an inch shorter than the lateral feathers in the Pacific bird; while in the American the emargination is much less, only about a fourth of an inch. The differences in color are slight. The American bird has the occiput bluish plumbeous, which fades into pure white on the crown anteriorly; while the Pacific bird has the occiput darker, and the crown ashy white instead of pure. The sides of the head and neck all round, in the American bird, have a bluish plumbeous wash, notably different from the general fuliginous, which is entirely wanting in the Pacific bird. The feet of the American bird appear much darker in the dried skin.

Mr. Cassin, in the Ornithology of the Expedition, remarks upon these differences in the following words: "Numerous specimens from the shores and islands of the Pacific Ocean present, with some degree of uniformity, small and apparently unimportant differences from others from the Atlantic coast of North America. The bill appears to be larger in the latter, and a slight dissimilarity is observable in the colors. On careful comparison, however, we are not inclined to consider the bird of the Pacific as possessing characters sufficient to justify a distinct specific designation; but venture to suggest that further examination of specimens from localities in the two great oceans, and especially of the various immature plumages, is yet desirable."

I tabulate the differences between the two, leaving it to future investigation to determine their constancy and value.

American Bird.

Length of wing 10·00 to 10·50 inches.

Length of tail about 6·00.

Height of bill at base ·38.

Length of tarsus 1·00.

Length of middle toe and claw 1·45.

Middle toe and claw 1·45 hundredths of tarsus.

Central tail feathers but slightly shorter than the next.

Occiput bluish plumbeous, becoming pure white on the front. Sides of head and neck all round with a decided wash of bluish plumbeous. Feet nearly black in dried skin.

Pacific Bird.

Length of wing 11·00 to 11·25.

Length of tail about 7·00.

Height of bill at base ·43.

Length of tarsus 1·00 (same).

Length of middle toe and claw 1·60.

Middle toe and claw 1·60 hundredths of tarsus.

Central tail feathers ·50 of an inch shorter than next.

Occiput brownish ash, becoming ashy white (not pure) on the front. Sides of head and neck not notably different from general fuliginous. Feet reddish brown in dried skin.

The difference in color appears very slight. I attach more importance to the discrepancies in size and proportions. If the Pacific bird be really distinct from the American, it has probably yet to receive a name; for it is very different from the various species of *Anous* mostly described by Mr. Gould. In that event, it may be called a *ANOUS FRATER*.

In the preceding pages are noticed all the Terns which are known to inhabit

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Brill. p. 199

S. stolidus aud. Zyn. p. 322.

Megalopterus stolidus. Macgillivray, Port Ad. v Man. orn. 286

S. stolidus. Wilson, ornith. 831, p. 620.

Trinckmann, 1840 p. 461.

Schlegel, 1840, p. 377, Schlegel. Rev. 1844, p. 131.

Becland, orn. 1849. 835.

North America. The fact of the writer's being actively engaged in professional duties at a Military Hospital while committing to paper the results of his investigations, will be a sufficient excuse for any evidences of hasty composition which may be apparent.

Catalogue of the MIOCENE SHELLS of the Atlantic Slope.

BY T. A. CONRAD.

In the Miocene or Upper Tertiary formation of the Atlantic Slope there have been collected about five hundred and eighty species of shells,—two hundred and seventy-two of which are Conchifera and three hundred and nine Gasteropoda. The most northern limit of this formation appears to be in Gloucester County, New Jersey, and it underlies the eastern portions of Delaware, Maryland, Virginia, North and South Carolina. I have included in the Miocene formation that portion of the South Carolina Tertiary referred to the Pliocene period by Tuomey and Holmes, because I can discover no line of demarcation by which these tertiary strata can be divided into two distinct groups. The extinct species common to South Carolina and the more Northern States are numerous, and the fauna can only be regarded as that of one geological era. Some few of the species described by Tuomey and Holmes from the South Carolina Tertiary occur also in New Jersey, at the most northern boundary of the Miocene. The per centage of recent species in South Carolina, it appears to me, should be greatly reduced,—and I would reject from the list as many as eighteen, consisting of the following shells: *Busyon canaliculatum*, *B. per-versum*, *Strophona literata*, *Littorina irrorata*, *Natica canrena*, *Dolium galea*, *Fasciolaria gigantea*, *F. distans*, *Pholas costata*, *P. oblongata*, *Petricola pholadiformis*, *Solen ensis*, *Lucina divaricata*, *L. Pennsylvanica*, *Cardium magnum*, *Macra similis*, *Yoldia limatula*, *Strigilla fluviatilis*. It may be that all those species are extinct, but I have not had an opportunity of comparing all those doubtful shells with the recent forms. *Natica heros* and *N. duplicata*, Say, have fossil analogues in Maryland so closely resembling them that I find no essential difference; but the shells of this doubtful character are not more than thirty in number out of five hundred and eighty-one species. Near the coast, a Post-Pliocene or Pleistocene formation rests immediately on the Miocene, replete with existing forms, but as a group resembling that of more Southern latitudes on the coast of the United States. There is no intermingling of extinct species between these two formations, and the passage is almost as abrupt as between the Eocene and Miocene.

The final subsidence of the Eocene appears to have been accompanied by such an alteration of climate or other conditions as to have given origin to a totally distinct terrestrial and marine fauna, the latter existing on an Eocene and Cretaceous bed, extending from New Jersey to South Carolina inclusive, and which appears to have been generally extinct and above the sea during the existence of the European Pliocene faunas.

Works referred to.

C. Miocene Foss. Conrad, Medial Tertiary or Miocene Fossils of the U. S.

C. Foss. Shells of Tert. Form. Conrad, Fossil Shells of the Tertiary Formations of the United States. 1832.

Trans. Amer. Philos. Soc. Transactions of the American Philosophical Society of Philadelphia, vol. ix. n. s. 1845; vol. vi. n. s. 1839.

Sillim. Journ. American Journal of Science and Arts.

Journ. A. N. S. Journal of the Academy of Natural Sciences of Philadelphia.

Procced. A. N. S. Proceedings ditto.

1862.]

Plioc. Foss. S. C. Pliocene Fossils of South Carolina.
Bullet. Nat. Inst. Bulletin of the National Institution.
Emmons, Geol. N. C. Geology of North Carolina.

MURICIDÆ.

MUREX, Lin.

M. globosus, Emmons, *Geol. N. C.* 247, 105a.

Subgenus PRERORYTIS, Conrad.

Fusiform; six prominent recurved foliated ribs; aperture ovate; channel closed.

M. umbrifer, *C. Tert. Foss.* 17, 3, 1. Emmons, *Geol. N. C.* 247, 104a.

M. sexcostata, Emmons, *Geol. N. C.* 248, 106.

TYPHIS, Montfort.

T. acuticosta, *C. Journ. A. N. S.* vi. 217, 9, 1. 1829.

TROPHON, Mont.

T. (Fusus) tetricus, *C. Tert. Foss.* 18, 3, 6. *Foss. Med. Tert.* pl. 46, fig. 4.

FUSINÆ.

FUSUS.

Subgenus SCALASPIRA, Conrad.

Fusus strumosus, *C. Tert. Foss.* 18, 3, 4. *Foss. Med. Tert.* pl. 49, fig. 3.

NEPTUNEA, Bolten.

N. (Fusus) devexa, *C. Foss. Med. Tert.* pl. 49, fig. 8. *Proceed. A. N. S.* i. 309.

N. (Fusus) exilis, *C. Tert. Foss.* 17, 3, 2. *Mioc. Foss.* pl. 49, fig. 1. Tuomey and Holmes, *Plioc. Foss. S. C.* 150, 30, 5. Emmons, *Geol. N. C.* 251, 111a?

N. (Fusus) equalis, Emmons, *Geol. N. C.* 251, 11.

N. (Fusus) filosa, *C. Proceed. A. N. S.* 1863.

N. (Fusus) lamellosa, Emmons, *Geol. N. C.* 251, 112.

N. (Fusus) parilis, *C. Tert. Foss.* 18, 4, 2. *Foss. Med. Tert.* pl. 49, fig. 5.

N. (Fusus) rustica, *C. Tert. Foss.* 18, 4, 1.

Fusus errans, *C. Journ. A. N. S.* vi. 223.

N. (Fusus) trossula, *C. Tert. Foss.* 18, 3, 5. *Foss. Med. Tert.* pl. 46, fig. 6.

FASCIOLARIIDÆ.

BUSYCON, Bolten.

B. alveatum, *C. Proceed. A. N. S.* 1862, 583.

B. adversarium, *C. Proceed.* 1863.

B. perversum, Tuomey and Holmes, (not Lam.,) *Plioc. Foss. S. C.* 145, 29, 3.

B. carinatum, *C. Proc. A. N. S.* 1862, 286.

B. (Pyrrula) carica? Tuomey and Holmes, *Plioc. Foss. S. C.* 145, 29, 1.

B. (Fulgur) contrarium, *C. Sill. Journ.* xxxix. 387. *Miocene Foss.* pl. 45, f. 11.

B. perversum, Emmons, (not Lam.,) *Geol. N. C.* 249, 107.

B. (Fulgur) coronatum, *C. Bullet. Nat. Inst.* 187. *Mioc. Foss.* pl. 46, f. 1.

Pyrrula canaliculata, Lyell, (not Lam.,) *Man. Geol.* 172, 151.

B. canaliferum, *C.*

Busycon canaliculatum, Tuomey and Holmes, (not Lam.,) *Plioc. Foss. S. C.* 145, 29, 2.

B. Carolinensis, Emmons, *Geol. N. C.* 249, 108.

B. (Cassidulus) Carolinense, Tuomey and Holmes, *Plioc. Foss. S. C.* 147, 30, 1.

B. (Pyrrula) excavatum, *C. Sill. Journ.* xxxix. 387. *Miocene Foss.* pl. 45, f. 12.

Cassidulus Carolinensis? Tuomey and Holmes, *Plioc. Foss. S. C.* 147, 30, 1.

B. filosum, *C. Proceed. A. N. S.* 1862, 286.

isés que ne sont ni de vraies plantes, ni de vrais animaux. Ce n'est qu'à force d'observations et de méditations que l'on pourra distinguer clairement les vraies plantes et les vrais animaux des autres êtres organisés qui en diffèrent assez pour avoir une autre détermination et un autre rang dans la division méthodique des productions de la nature." (Séances des Ecoles Normales, tome v. p. 277.)

We cite these authors only for the general purpose of illustrating the usual style of the suggestions and opinions frequently to be met with. Purposely, at present, we do not extend extracts of this description, nor give any such from living authors.

On the *LESTRIS RICHARDSONI* of Swainson; with a Critical Review of the Subfamily *LESTRIDINÆ*.

BY ELLIOTT COUES, M.D., U. S. A.

In the year 1831, a Jäger was described and figured in the Fauna Boreali-Americana, under the name of "*Lestris Richardsoni* Swains." This bird has been generally supposed to be the true *parasitica* of Brünnich, in the now well known *fusco-unicolor* state of plumage which all the species of *Stercorarius* pass through in arriving at maturity. Consequently, the name "*Richardsoni*" has been employed for the common Jäger, especially by American writers, to the exclusion of the prior name "*parasitica*," of Brünnich.

Examination of the works of Temminck, who, at the time in which he wrote, probably knew more about Jägers than almost any author, will show how this misapplication of a name became general.

In his edition of 1820, he is acquainted with but a single species of *Lestris*, (besides *catarractes* and *pomarinus*,) which he calls "*parasitica* Brünn." His description of the latter is made up of a mixture of the characters of *parasitica* and *Buffoni*; and the synonyms of the two are indiscriminately adduced.

In his edition of 1840, he recognizes the distinctions between the two species *parasitica* and *Buffoni*; but, unfortunately, he calls the true *parasitica* "*Richardsoni*," adducing the proper synonyms of the species under that name; while he describes the true *Buffoni* under the name of "*parasitica*." He is thus fully aware of his mistake of 1820; for (page 498) he makes the following "*Remarque* : Comme notre article du stercoraire parasite ou labbe du manuel p. 796, renferme, ainsi qu'il vient d'être dit, les synonymes de deux espèces distinctes, (le stercoraire à filets subulés courts, et le stercoraire à longs filets,) il est nécessaire de refaire en totalité toutes les indications sur ces deux espèces."

But, believing Swainson's bird to be the same as the *parasitica*, he says (page 492), in defence of the nomenclature adopted: "Shortly after the publication of the second edition of the Manual, of 1820, we became aware of the error in our article on *Lestris parasitica*, where the description and synonymy of two distinct species are confounded. Guided by Boie's observations, we had applied the name *parasitica* to the small Jäger with short tail feathers, proposing to adopt for the one with long tail feathers (the labbe à longue queue of Buffon,) the name *Buffoni*; but since some English authors,* led into error by our article, have thought that they have discovered in our *parasitica* a new species, which they call "*Richardsoni*," we are obliged to adopt their mistake, sanctioned as it is by several naturalists, and in many collections. Being, then, confident that *Lestris Richardsoni* is really the same with our *L. parasitica*, with short tail feathers, . . . we adopt here the first of these names for the short-tailed Jäger, leaving to the long-tailed species

* i. e., Swainson, and others.

the appellation of *parasitica*; for we take it, names and priority of discovery are not of the last importance; all that is necessary is to be understood when we talk of species; and for this purpose, a name sanctioned by usage, and which does not cause confusion, is far better than one which has nothing to recommend it but its priority of date."

It was by this somewhat heterodox reasoning on the subject of nomenclature, that Temminck adopted for the common Jäger the name of "*Richardsoni*," and turned over the name "*parasitica*" to the long-tailed species. His example has been very generally followed, as will be seen by consulting the synonyms given in this paper. I am inclined to the opinion, however, that Swainson's bird may be a distinct species from the old *parasitica* of Brünnich, upon the following grounds:

In the very extensive series of Jägers in the Museum of the Smithsonian Institution, there are several specimens which agree among themselves in the possession of some characters which differ considerably from those of the typical *parasitica*. The whole bird is considerably larger,—the difference in the wing from the flexure amounting to nearly or quite an inch, and proportionate discrepancies existing in the tarsi and toes. The bill is longer, (though not stouter;) its nail longer compared with the ceral portion, and its convexity more gradual. The most marked features, however, lie in the tail. While the relative proportions of the lateral feathers to the central pair are much as in *parasitica*, the whole tail is longer, more graduated, and the individual feathers somewhat broader. From the insertion to the tips of the pair of feathers next the central, measures in *parasitica* about $5\frac{1}{2}$ inches; in "*Richardsoni*" about $6\frac{1}{2}$. A proportionate difference exists in the absolute total length of the central pair; though their relative lengths do not differ appreciably. The tail of the specimens under consideration is more graduated,—the amount of graduation being nearly an inch, instead of about half an inch, as in *parasitica*. The central pair seem broader than in *parasitica*, and somewhat of a different shape; and the same may be said, though less markedly, of the lateral feathers. Comparing some of these specimens which are in the dusky stage with the corresponding state of plumage of *parasitica*, I find the dusky to be much darker,—in fact, quite of a blackish rather than of a fuliginous hue. No other differences are appreciable.

These specimens agree minutely with the plate and description of what Swainson called "*Richardsoni*," so that there cannot be the slightest doubt of the propriety of referring them to that species. The only question is, are the differences above detailed sufficient to constitute specific distinctions?

Bonaparte, in his *Conspectus*, ii. page 209, gives a form or variety of *parasitica* thus: "*a. L. coprotheres* Brünn.; *Richardsoni* Swains. . . . ex bor. Eur. et Am. Omni tempore et ætate obscure unicolor." Swainson's figure also represents the bird in this *fusco-unicolor* stage; he perhaps thinking that this feature formed a distinctive character. This, however, cannot be the case; and I wish to be distinctly understood as throwing this out of consideration altogether in discussing the claims of the bird to specific distinction, since it is now certain that this dusky stage is merely an evidence of immaturity; and that the bird, when adult, will have the white neck all round, and white underparts, exactly as in *parasitica*. If it is to be separated at all, this is to be done upon the grounds of the differences in size and proportion above detailed,—without the least reference to the dusky stage of plumage in which it is figured by Swainson.

While I am not thoroughly satisfied of the entire propriety of so doing, I shall, in the following Review of the subfamily, separate it specifically from the *parasitica*; desiring to call attention to it, as at least a well-marked form, not a distinct species.

[May,

General Considerations.

Before proceeding to speak in detail of the individual species of the *Lestridinæ*, I desire to make a few remarks on the points which at the present day must be taken more especially into consideration, in carrying on an investigation of this subfamily of birds.

Although the contrary was formerly the case, yet at the present time the species of Jägers are pretty definitely ascertained,—being better known, in fact, than the species either of *Larinæ* or *Sterninæ*. This arises partly from the fact of the small number of existing species, and partly because most of the species present really very marked differences, which can hardly be overlooked by any one examining specimens with an ordinary degree of mental acumen. With the amount of knowledge which we possess at present, it would be quite impossible to mistake *Buffoni* for *parasiticus*, etc., in whatever stages of plumage they may be found; and therefore, except in one or two instances, I have thought it quite unnecessary to present any lengthy description or specific characters, for the purpose of separating one species from another. In a paper like the present, such points seem quite uncalled for.

At the same time, there is a point concerning which authors are even now at variance, and which seems to have need of all the light that can be thrown upon it. I refer to the remarkable changes of plumage which the species of one of the genera of this subfamily,—*Stercorarius*,—undergo in arriving at maturity, and more particularly that perplexing state in which the bird is uniformly dusky. From the time when Brünnich, in 1764, institutes a *Catharacta* “*coprotheres, corpore toto fusco*,” etc., and then adds: “*An a præcedenti sexu vel specie diversa? A quibusdam hæc pro foemina, illa §127 (parasitica) pro mare habetur*,”—the question has been an open one. Some authors have made a distinct species of this stage; others have given it as a variety; others still have considered this plumage indicative of age, or of season, or of sex. Modern opinions have generally agreed in considering it as simply an evidence of immaturity, and not a variety, much less a distinct species. I hope I shall be able to show in the following pages, that this latter opinion is the correct one, even if I cannot prove exactly *what* age the dusky stage is characteristic of, or whether more than one sex participates in it. To this end, I have gone into detail regarding the various ages of two of the species,—*pomarinus* and *parasiticus*.

But there is still another point in the study of the Jägers, which, being a matter of more than ordinary difficulty, demands our most patient and careful investigation. This is the *bibliography* of the subfamily. Many of the species were known to the very earliest,—even pre-Linnæan,—writers on ornithology; and, as a natural consequence, the synonymy of the various species is as intricate, and in as puzzling a state of complication, as perhaps that of any other group of birds, rendering it a peculiarly difficult task to unravel the various knotty points which present themselves for our consideration. Fortunately, however, the synonymy of most of the species is rather intricate, than doubtful; rendering it possible, perhaps, to present a tolerably accurate list of references, by careful and patient study. To this part of the subject in hand I have paid special attention, and it is believed that the lists of synonyms given are pretty full, and include all the important references. Others must judge of the accuracy of the citations, each according to his own views of the subject.

If I seem to have made any uncalled for innovations in nomenclature, I can only offer as an apology, that it is impossible to conduct an investigation into the bibliography of the subfamily without seeing that many of the names in common employ must be superseded, provided we are to pay any attention to recognized laws of nomenclature.

1863.]

Family *LARIDÆ*.

Subfamily LESTRIDINÆ.

Of this, the first subfamily of the *Laridæ*, there are at present known to exist eight species, belonging to two genera. Of these, five inhabit the northern, and three the southern hemisphere. The five northern species are all represented in North America. The following analytical table will represent the characters of the species and genera sufficiently well for our present purposes. The diagnoses are purposely made as brief as possible, only the most prominent features being noticed.

§ Analytical Table of the Genera and Species of the Lestrudinæ.

- I. Staturâ maximi, et formâ robustissimi. Pedes et rostrum validi. Tarsus brevior quam digitus medius cum ungue. Rectrices mediæ latæ vix ultrâ cæteras porrectæ.....Genus BUPHAGUS.
 - a. Rostrî longitudo poll. 2, et ultrâ; altitudo .75. Ad angulorîs 3.00 poll. Ex mariâ arcticâ..... *B. skua*.
 - b. Rostrum brevius, crassius. Ex mariâ antarcticâ..... *B. antarcticus*.
- II. Staturâ minores, et formâ graciliores. Pedes et rostrum graciles. Tarsus non brevior quam digitus medius cum ungue. Cauda longior, et rectrices mediæ valdè ultrâ cæteras porrectæ.....Genus STERCORARIUS.
 1. Tarsi posticè asperrimi. Rectrices mediæ latæ in apices ipsas.
 - a. Rectrices mediæ cæteris 4 pollices longiores..... *S. pomarinus*.
 2. Tarsi posticè subasperi. Rectrices mediæ longæ, rigidæ, acuminatæ.
 - a. Rectrices mediæ cæteris 4 poll. longiores..... *S. parasiticus*.
 - b. Similis *S. parasitico*; sed major, caudâ totâ longiore, plus rotundata..... *S. Richardsoni*.
 - c. Similis *S. parasitico*; sed minor, rostro magis compresso, reetricibus mediis elongatis, apicibus rotundatis (Bp.)..... *S. Hardyi*.
 - d. Similis *S. parasitico*. Sed etiam minor *S. Buffoni*; reetricibus mediis lineari-acutis, rachide denudata rigida, pollice et ultrâ cæteras superantibus (Bp.)..... *S. spinicauda*.
 3. Tarsi posticè subasperi. Rectrices mediæ longissimæ, flexibiles, filiformes.
 - a. Rectrices mediæ cæteris 8 ad 10 pollices longiores....*S. Buffoni*.

Genus BUPHAGUS Moehring.

Buphagus, Moehring, Genera Avium, 1752, page 66, No. 71. Typus *Larus catarractes*, Linn.

Stercorarius, "Brisson," Vieillot, Nouv. Dict. d'Hist. Nat., 1817, 153. Typus idem. (Sed non verus *Stercorarius*, Briss. ejus typus *Larus parasiticus*, L. est.) Gray, Genera of Birds, 1849, 651. Degland, Ornith. Europ. 1849, ii. 287. Bonaparte, Conspectus Avium, 1856, 206. Lawrence, Gen. Rep. Birds N. A. 1858, 838; et aliorum auctorum.

Catharacta, Brünnich, Orn. Bor. 1764, 32. Typus *Cath. skua* Brünn. Bonaparte, Comparative List, 1838.

Larus, (partim) Linnaeus, Systema Naturæ, 1766. Gmelin, Systema, Naturæ, 1788. Latham, Index Ornithologicus, 1790. Meyer et Wolf, Tasschenbuch deutsch. 1810.

Catarractes, Pallas, Zoog. Rosso-As. 1811, ii. 308. Typus *C. skua*. Stephens, Shaw's Gen. Zool. xiii. 1825, 214.

Lestris, "Illiger," Temminck, Man. Orn. 1820—40. Typus *L. catarractes*. (Sed non verus *Lestris* Ill. ejus typus *L. parasitica* L. est.) Faber,

[May,

Ex maribus Arcticis
Ex maribus Antarcticis.

See Grammatical and General Hypotheses and Errors
in the Latin Bible.

Genus Lestris "Ellig"; Naumann. V. D. VII, 1840, p. 463, has as
type. B. skua; contains all other species.

"Cataracta aldrovandi" Killugh orn. p. 265. (Bris)

Larus varius sive skua, Bris. orn. VI 1760 p. 167 (Jussieu)

Larus cataractes, Schaffer, Mus. ornith. 1779 p. 68 pl. 39;

Lestris cataractes, Bechm, Licht. Naturg. Berg. V. 1823, p. 739.

Lestris cataractes Temm. Naumann. N. V. D. 1840, VII, p. 470, pl. 270 to 299
S. pomarinus, Vullst. pl. cc lxxxviii (Excl. synonym). (Commencement com. 4 (8-19 mil.)
Stercorarius cataractes Degl.

Prodromus Isl. Orn. 1822. Lesson, Traité d'Ornith. 1831. Keyserling et Blasius, Wirbelth. Europ. 1840; et auctorum aliorum.
Megalestris, Bonaparte, Conspectus Avium, 1856, p. 206. Typus *Larus cataractes*, Linn.

1. *BUPHAGUS SKUA* Coues ex Brünnich.

"*Skua Hojeri*, Ray, Synopsis Avium, 128."

Larus fuscus, Brisson, Ornithologie, vi. 1760, p. 165. "Scopoli, Bemerck. Natur-Gesch. 1770, 90."

Catharacta skua, Brünnich, Ornithologia Borealis, 1764, 33. No. 125.

Catarracta skua, Retzius, Fauna Suecica, 1800, 161, No. 123. Bonaparte, Cat. Met. Ucc. Europ. 1842, 79. Bonaparte, Rev. Crit. Degland's Ornith. Europ. 1850, 202.

Catarractes skua, Fallas, Zoographia Rosso-Asiæ, ii. 1811, 309. Stephens, Shaw's Gen. Zool. 1825, xiii. 215.

Cataractes skua, Macgillivray, Man. Orn. ii. 1842, 255.

Catarractes vulgaris, Fleming. (fide Bp.)

Catarractes fusca, Leach. (fide Bp.)

Lestris skua, Brehm. (fide Bp.)

Larus cataractes, Linnæus, Systema Naturæ, i. 1776. Gmelin, Systema Naturæ, i. 1788, 603. Latham, Index Ornithologicus, ii. 1790, 818.

Larus keesask, Latham, Index Ornithologicus, ii. 1790, 818.

Lestris cataractes, Illiger, Prodromus, 1811, 273. Faber, Prodromus Island. Ornith. 1822, 102. Temminck, Manuel d'Ornith. ii. 1820, 792. Temminck, Manuel d'Ornith. iv. 1840, 494. Bonaparte, Synopsis, 1826, No. 304. Nuttall, Man. Ornith. ii. 1834, 312. Schlegel, Rev. Crit. Ois. Eur. 1844, 84.

Lestris catharactes, Brehm, Naturg. Europ. Vög. 1823, 739.

Lestris catharractes, Schinz, Europ. Fauna, 1840, i. 387.

Lestris catarrhactes, Kaup, Sk. Ent. Europ. Thierw. 1829, 64. Keyserling et Blasius, Wirbelth. Europ. 1840, i. 239.

Stercorarius catarrhactes, Vieillot, Nouv. Dict. d'H. N. 1817, xxxii. 154. Vieillot, Fauna Franç. 1828, 385. Degland, Orn. Europ. 1849, ii. 289. Gray, Genera Avium, iii. 1849, 652.

Stercorarius cataractes, Bonaparte, Consp. Avium, 1836, ii. 206. Lawrence, General Report Birds N. A. 1858, 838.

Stercorarius cataractes, Selys-Longchamps, Fauna Belg. 1842, 155.

Stercorarius catharractes, Des Murs, Traité d'Ool. Ornith. 1860, 551.

Stercorarius pomarinus, Vieillot, Galerie d'Ois. ii. 1834, 220; sed non Temm. nec auctorum!

Sp. ch.—Above blackish brown, more or less variegated with chestnut and whitish; each feather being dark-colored, with a spot of chestnut towards its extremity, which in turn fades into whitish along the shaft towards the tip of each feather. On the latero-nuchal region, and across the throat, the chestnut lightens into a decided reddish yellow, the white being as a well-defined, narrow, longitudinal streak on each feather. The crown, post-ocular and mental region have but little whitish. Inferiorly, the plumage is of a blended fusco-rufous, lighter than on the dorsum, with a peculiar indefinite plumbeous nuance. The wings and tail are blackish; their rhachides white, except towards the apices; the remiges and rectrices white for some distance from the bases. This white on the tail is entirely concealed by the long tail-coverts, but appears on the outer primaries as a conspicuous spot. The bill and claws are blackish horn; the feet pure black.

Bill from base to tip 2.10; to end of cere 1.20; gape 3.00; height at base .75; width a little less; rami 1.60; gonys .50; wing 16.00; tail 6.00; tarsus 2.70; middle toe and claw 3.10.

1863.]

Habitat.—Seas and sea coasts of the northern hemisphere; more particularly in higher latitudes.

It is quite unnecessary here to go into any details regarding the specific characters of so long and well known a species, and one which is so very distinct both in form and colors from any other of our continent.

I am well aware that the adoption of the name under which I present this species, may be looked upon by many ornithologists as an unnecessary, or at least as an uncalled for innovation. In defence of the nomenclature adopted, I beg leave to offer the following considerations, which, it is hoped, will exonerate me from the charge of needlessly changing names, by proving that if we are to pay any attention to recognized rules of nomenclature, such a procedure is unavoidable in the present instance, and that no other name than the one adopted can be used:

In the first place, Moehring's genus *Buphagus* is certainly based upon a bird which was afterwards the *Larus catarractes* of Linnæus. His diagnosis (vide infra*) unmistakably refers to one of the *Lestridineæ*, while the species is fortunately exactly fixed by his reference to "*Højeri*" and "*catarractes*." Perhaps no one of his diagnoses is more definite than this one. This being the case, the only question is, are his genera to be adopted and used in ornithology?

I believe that the rule generally followed regarding Moehring's genera, is that they are to be adopted when they can be certainly identified, provided that they do not conflict with subsequent Linnæan appellations. Upon this principle, many of Moehring's old genera have been revived and adopted by Gray, and his example has been followed by Baird, and other ornithological writers. It is thus that such genera as *Philomachus*, *Collyrio*, *Trogon*, *Uria*, *Catarractes*, etc., have taken the precedence over more modern appellations, to which their priority entitles them. The rule, however, does not appear to have been so strictly carried out as it should be, if adhered to at all. Gray, for example, adopts *Stercorarius* of Brisson for the Jäger, remarking "that it is supposed to be *Buphagus* of Moehring." His procedure in this case is a little remarkable, since *Buphagus* is certainly identifiable; and there is no Linnæan genus with which it can conflict,—Linnæus ranging all the Jägers known to him with the gulls, under *Larus*. With this restriction, which, it must be confessed, is rather a compliment to Linnæus, than strict justice to other writers, the genera of Moehring are to be adopted when identifiable. The fact of that author not being a binomalist,—in fact, not dealing at all with species,—does not appear to be a valid reason why his genera should be neglected any more than those of Brisson for example. I am decidedly in favor of the adoption for any genus of the first appellation that is proposed for it after the date of the first published works of Linnæus, provided there be no conflict between them: considering the introduction of a definite form of nomenclature as beginning with that illustrious writer.

Now, supposing that we do reject Moehring's *Buphagus*, let us see what will be the consequence. "*Stercorarius* Brisson 1760" is the name which of late has been most generally applied to the genus in question. But the type of Brisson's genus is not the *catarractes*,† but the true *parasitica*, as is evident by his elaborate description, although no specific name is given; and hence, if it is to be used at all, it must be for the genus of which *parasitica* is typical. But Brisson was a polynomialist; and if we refuse to adopt Moehring's names on this score, Brisson's genera must also be rejected: to which procedure, of course, no naturalist would assent.

Catharacta of Brünnich of 1764 comes next in order, and has as its type

* Moehring, *Genera Avium*, 1752, page 66, No. 71. "*Rostrum postice rectum, membrana callosa ad nares usque tectum, versus apicem incurvum, lateribus compressis. Femora extra abdomen. Digniti antici tres membrana intermedia toti coherentes, posticus liber.*"

† Brisson, on page 168 of vol. vi. of his *Ornithologie*, ranges this species under *Larus*, calling it "*Le Goeland brun, Larus fuscus.*"

Plumage of the young of the year.

A young bird of the year (No. 22266, Iceland, Sept 11, 1889, from the Min. Zool. Mus. Copen.) presents the following.

The size is very much less. Bill 1.75 along culmen 2.75 along gape, the latter at base about .07, length of gape .85 tarsus 2.60 middle toe & claw about the same, 2.25. Tail 5.75. The bill is weak and slender compared with ad. the cere ill developed, the strigae not yet apparent, and the ridges and angles general want sharpness of definition. The gape is extremely short. Wings exceed, short, and rounded. - 2nd Pri. longest, third near equal, first exceed fourth. The inner secondaries & tertials much within an inch of tip second pr. The central pair of coverts are of anything shorter than the next. The colors generally are as in the adult, but they are all duller and more bloodless, having no white spots at all; and though the reddish spots are numerous and occupy a large part of the feathers of the upper parts, they are very dull. They are especially numerous along the edge of the fore-cover, and on the secondary and inner coverts. On the under parts the color is much lighter, and more bloodless and indistinct than on the upper being of a light dull rufous, especially on the abdomen, but more less obscured with ash as on plumbeus stage. The primaries secondaries and tertials, together with the tail feathers, are brownish black, their shafts yellowish white. At the bases of the former there exists the usual large white spot, but it is more restricted than in the adult, and mostly covered by the bastard grills, so that it is hardly apparent on the outside of the wing, but very conspicuous on the inner. The legs & feet, all parts colored, being brownish black, variegated with yellowish.

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C. skua, which is the true *catarrhactes*. But here he is anticipated by Moehring, who had previously applied the name *Cataractes** to a genus of Guillemots, of which *Uria troile* is the type. This genus has been adopted for the latter birds, by Cassin, Bryant, and others; and, unless we admit the different spellings of the same word as distinct genera, which would seem quite unwarrantable, Brünnich's name must be superseded.

Lestris of Illiger (1811) being based upon the *parasitica*, I am aware of no other genera than the above, which were founded on the *Larus catarrhactes* down to 1856, when Bonaparte, in his *Conspectus*, proposed the name *Megalestris*. The choice then lies between Moehring's *Buphagus* and Bonaparte's *Megalestris*; and of the two, I prefer to take the former, especially as by so doing we shall be enabled to retain *Stercorarius* of Brisson for the other species of the subfamily.

Regarding the adoption of the specific name *skua*, I will merely remark that as Brünnich was as strict a binomialist as Linnaeus himself, there is no reason why his specific names should not be employed in all cases when they are identifiable. The date of Brünnich's "*skua*" is 1764; that of Linnaeus' "*catarractes*" is 1766.

It is a little surprising that Brisson, after instituting the genus *Stercorarius* for the Jägers, should be so far at fault regarding the proper affinities of the present species as to place it among the Gulls, under the name of *Larus fuscus*. His descriptions of all the Jägers are remarkably accurate, and so full and complete as to admit of the positive identification of all his names. In this case, and in numberless other instances, there is cause for exceeding regret that he was a polynomialist; for, had he been a strict binomialist, so that we could adopt his specific names, we should be saved a vast deal of uncertainty and profitless discussion as to the proper specific appellations to be employed.

The *Larus keeask* of Latham is certainly the present species. That author gives 22 inches as the total length, and 3 inches as the length of the bill,—dimensions which will apply to no species of *Stercorarius*; and there is no other *Buphagus* than the present inhabiting the northern hemisphere. His bird "habitat in America ad sinum Hudsonis."

The plate which Vieillot gives in his *Galerie des Oiseaux*, (1854) of his *Stercorarius pomarinus*, represents undoubtedly the present species; and is, so far as I am aware, the only instance of the application of the name *pomarinus* to any other species than that to which it rightfully belongs. This error seems the more surprising, since Vieillot, in 1817 and in 1828 (vide *synon.*), gives the species as *Stercorarius catarrhactes*.

The other synonyms of the species do not require special notice. I have endeavored to preserve the various spellings of the word *catarrhactes* by the different authors cited. I quote *Catarractes fusca* Leach, and *vulgaris* Fleming, and *Lestris skua* Brehm, on the authority of Bonaparte.

2. BUPHAGUS ANTARCTICUS Coues ex Lesson.

Lestris catarractes, Quoy et Gaimard, Voy. Uranie, Ois. p. 38. Nec auct.

Lestris antarcticus, Lesson, Traité d'Orn. 1831, p. 606.

Stercorarius antarcticus, Bonaparte, Consp. Av. 1856, p. 207.

DIAG.—*B. Buph. skue* similis; sed rostro crassiore et brevior.

Habitat.—Antarctic Ocean.

* This word affords a good illustration of the very various cæography we often find in the names of the old authors. Thus, we have *cataracta*, *catarractes*, *catharacta*, *catarracta*, *catarractes*, *catarrhactes*, &c. The orthography of the word will be evident if we regard its etymology. It is from *κατα*, and *γρῦμι*, whence *καταρρακτης*, "a robber or despoiler;" the latinization of which is *catarrhactes*,—the *h* being derived from the rough aspirate over the second *ρ*. Brünnich's spelling of the word might perhaps lead us to suppose it derived from *καθαρις*, "to cleanse or purify;" but this is evidently not the case,—the latinization of the word formed from the latter root giving us *cathartes*, Illiger's genus of American vultures.

This species is very closely related to the preceding, if it be really distinct from it. The fine series in the Museum of the Smithsonian Institution, procured by the United States Exploring Expedition under Com. Wilkes, all differ from the *skua* of Europe and America in the possession of shorter, and comparatively stouter and deeper bills, with more obtuse tips. These are the only points of discrepancy I have been able to detect in the examination of the series; but they appear to be quite constant.

Among the series is a specimen much larger than the rest, and than the *skua* from Europe. The bill is nearly two and a third inches long, and very stout; the wings an inch, and the tarsus a third of an inch longer than the average of European skins. It is evidently a very old individual, and the chestnut and whitish have almost entirely disappeared from both the upper and under parts, leaving the whole bird deep blackish-brown above, and a somewhat lighter brown, or fuliginous, below. The specimen is referred to in Cassin's List of the Birds of the Exploring Expedition, as "*Lestris* —?" Although the general appearance of the bird is really different from that of the rest of the series, I do not think that the differences presented are anything more than indicative of the great age of the specimen. A collection of American and European Jägers, obligingly furnished by Mr. D. G. Elliott for examination, contains a specimen of the true *skua* from the Atlantic Ocean, which presents a very similar condition of things. The size is greater than that of any other of the series of specimens, and the colors are nearly as uniform as in the antarctic specimen referred to. I think it more than probable that the birds of this genus continue to grow in size and proportions with increasing age, and that the colors have a tendency to become darker and more uniform under the same circumstances.

Genus STERCORARIUS Brisson.

Stercorarius, Brisson, Ornithologia, 1760, vi. (Typus *Larus parasiticus*, Linn.) et auctorum pleriq.

Catharacta (partim), Brünnich, Ornith. Borealis, 1764.

Larus (partim), Linnæus, Systema Naturæ, 1766. Gmelin, Systema Naturæ, 1788. Latham, Index Ornithologicus, 1790. Meyer et Wolf, Taschenb. Deutsch, 1810.

Lestris, Illiger, Prodrömus, 1811, p. 272. (Typus *Larus parasiticus*, Linn.) Et auctorum.

Prædatrix, Vieillot, Analyse, 1816, p. 62.

Labbus, Rafinesque, 1816, fide Bp.

Coprotheres, Reichenbach, 1850.

A single genus cannot, without great latitude and looseness of definition, be made to include all the species of this subfamily. The differences between *Buphagus skua* (with its southern representative *antarcticus*) and the other known species, are very great, and strongly pronounced, if we regard stature, proportions, character of central tail feathers, changes of plumage, &c. The differences fully warrant the distribution of the species of the subfamily into two genera, which may be thus defined:

BUPHAGUS.—Bill shorter than the middle toe without the claw; exceedingly robust; width at base about equal to the height, which is a third of the length of culmen. Striæ and sulci numerous and well marked. Encroachment of feathers on bill moderate; and nearly the same on both mandibles. Occiput scarcely crested. Wings only moderately long for this subfamily,—the primaries very broad, and rounded at their tips. Tail very short, broad, nearly even, the feathers truncated; central pair projecting but little, and broad to their very tips, which are also truncated. Feet large and stout; tarsi shorter than the middle toe and claw. Size large; form robust and heavy; general organization very powerful. Colors much the same over the whole body;

[May,

Stenomure pomaria DeGland.

Les. pomar. Haum. N. V. D. 1840, VII, p. 467: pl: 271; no. 300
DeKay, NY. F. 1844 p. 816, pl cxxxi fig. 292
Aud. Syn. p. 332
Burm. Lich. Naturg. V. Europ. 1823, p. 741

not subject to any great variations with age, sex, or season. Species, *B. skua* (type) and *B. antarcticus*.

STERCORARIUS.—Bill equal to middle toe without the claw, moderately robust, height at base more than a third of culmen; striæ and sulci fewer and more slightly marked. Encroachment of feathers on bill very great, especially on the upper mandible, where it greatly exceeds that on the lower, and is of a different outline from that of *Buphagus*. Occiput decidedly subcrested. Wings exceedingly long, the primaries narrow, tapering, with quite acute tips. Tail long; the lateral feathers more or less graduated; the central pair considerably, sometimes excessively, elongated, tapering and filamentous. Feet rather slender, the tarsi equal to, or slightly longer than the middle toe and claw. Size moderate or small. Form less robust, general organization much less powerful. Nearly bicolor when adult; passing through very various states of plumage before arriving at maturity. Species, *S. pomarinus*, *parasiticus*, (type) *Richardsoni*, *Hardyi*, *spinicauda*, *Buffoni*.

Of these, the five last are very strictly congeneric in every particular. *Pomarinus*, by its larger size, somewhat more powerful form, shorter and broader central tail feathers, &c., shows a slight aberration towards *Buphagus*. But in all other features the essential characters of *Stercorarius* are so strongly pronounced, that it cannot afford a link by which the two genera may be united.

? **STERCORARIUS POMARINUS** Vieill. ex Temm.

Larus parasiticus, Meyer et Wolf, Tasch. Deutsch. ii. 1810, 490. (Sed non Linn. nec auct.)

Larus crepidatus, Gmelin, Systema Naturæ, i. 1788, 602. Latham, Index Ornithologicus, 1790, ii. 819. (Citat *Sterc. striatum*, Briss.)

Stercorarius striatus, Brissot, Ornith. vi. 1760, 152, pl. 13, fig. 2. (Juvenis.)

Lestris striatus, Eyton, British Birds, 18—, 53.

Lestris pomarinus, Temminck, Man. Orn. ii. 1820, 793. Temminck, Man. Orn. iv. 1840, 495. Faber, Prodrum Island. Ornith. 1822, 104. Brehm, Naturg. Europ. Vogel, 1823, 741. Bonaparte, Synopsis, 1826, No. 305. Lesson, Manuel Ornith. 1828, ii. 388. Kaup, Sk. Ent. Europ. Theirw. 1829, 64. Swainson et Richardson, F. B. A. 1831, ii. 429. Nuttall, Manual Ornith. ii. 1834, 315. Audubon, Ornith. Biograph. 1839, iii. p. 396. Audubon, Synopsis, 1839, 332. Audubon, Birds America, 1844, vii. 186, pl. 451. Keyserling et Blasius, Wirbelth. Europ. 1840, i. 240. Schinz, Europ. Fauna, 1840, i. 388. Schlegel, Rev. Crit. Ois. Europ. 1844, 84. Bonaparte, Cat. Met. Ucc. Eur. 1842, 80. Bonaparte, Rev. Crit. Degland's Orn. Eur. 1850, 202. Thompson, Nat. Hist. Ireland, iii. 1851, 392. Bonaparte, Conspectus Avium, ii. 1856, 207. Des Murs, Traité d'Oologie Ornith. 1860, 551.

Stercorarius pomarinus, Vieillot, Nouv. Dict. d'H. N. xxxii. 1819, 158. Vieillot, Fauna Franç. 1828, 387. Selys-longchamps, Fauna Belg. 1842, 155. Degland, Ornith. Europ. 1849, ii. 291. Gray, Genera Birds, 1849, iii. 652. Lawrence, General Report Birds N. A. 1858, 838. Coues, Proc. Acad. Nat. Sc., Philada., 1861, p. 243.

Cataractes pomarinus, Stephens, Shaw's Gen. Zool. 1825, xiii. 216, pl. 24. Macgillivray, Man. Brit. Orn., ii. 1842, 256.

Coprotheres pomarinus, Reichenbach, Syst. Av. 1850, 52, pl. 328-9.

Cataractes parasita, var. *camschatica*, Pallas, Zoograph. Rosso-Asiæ, 1811, ii. 312.

Habitat.—Seas and sea coasts of Europe, Asia and North America. Interior of Arctic America.

I will notice the stages of plumage of this species, from that of the fully adult to that of the young of the year. Having a very extensive series at command, I have endeavored to trace one stage from another, and point out 1863.]

exactly how the great changes of plumage to which the bird is subject, are produced.

Adult.—Bill horn, deepening into black; feet black. Pileum and occipital crest brownish-black; this color extending much below the eyes, and occupying the feathers on the ramus of the inferior maxilla. Acuminate feathers of the neck light yellow. Back, wings, tail, upper wing coverts, under tail coverts as far as the flanks, deep blackish-brown. Under parts, from chin to abdomen, and neck all round, (except the yellow acuminate feathers,) *pure white*.

The above is the plumage of the fully adult bird, and is comparatively not often met with. A more usual state of plumage (described by Lawrence and figured by Audubon* as "fully adult,") is as follows:

Nearly adult.—Generally as in the preceding, but with a row of brown spots across the breast; the sides under the wings transversely barred with white and brown; the purity of the dark color of the abdomen interrupted by some touches of white. The legs still wholly black, and the tail feathers projecting as much as in the fully adult.

Now, as a somewhat younger stage than the preceding, we have the following

Intermediate stage, (No. 1275).—The band of dark spots across the breast has widened and enlarged, so that the whole breast appears brown, mottled with white; the sides under the wings are conspicuously barred with white and brown; the white of the under parts is continued down over the abdomen to the under tail coverts; the pure brown of these parts which obtains in the adult, now only appearing as transverse bars among the white. The upper tail coverts and some of the wing coverts are barred with white. The bases of the primaries are inferiorly white. The central tail feathers now only project an inch. The tarsi are quite changed in color; they are now irregularly blotched with chrome yellow,—the hind toe and nail being of this color.

The above changes are very gradual, and readily identifiable; the *quo modo* of their production may be thus summed up: In the adult the white and brown occupy distinct and well-marked regions; and the two colors are separated by trenchant lines of division. The younger the bird, the more this distinctness of definition of colors is lost,—the white invading and barring the brown, and the brown invading and mottling the white, wherever the two join. Then also the feet lose their black, and are variegated with yellow.

Besides the above, we find a state characterizable thus:

Dusky stage.—The bird is very nearly *unicolor*: blackish-brown all over; this color deepening into quite black on the pileum; lightening into fuliginous brown on the abdomen, with a slight gilding of the black on the sides of the neck. The whitish bases of the primaries exist. The feet are in the chromo-variegated condition. The central tail feathers scarcely project half an inch.

In the last edition of the *Manuel d'Ornithologie*, Temminck corrects various errors committed in previous editions, and gives, as his mature opinion, four "varieties" of this species. By examining his diagnoses, it will be seen at a glance that his "variety C" is the fully adult plumage above characterized; of which he says truly that it is "assez rare." His "B" is our second stage; his "A" is about our third stage; while his "D" is the fusco-unicolor stage just given. In his earlier editions he maintains that this dusky stage is absolutely independent of sex; but latterly he says that it is possible that the dusky birds are females; the white-bellied ones males. Ornithologists maintain very diverse views on this subject; but I believe it is generally supposed that this state of plumage is not indicative of either sex, but simply of immaturity.

Now I think that the four plumages which Temminck describes as adults

* I have Audubon's original specimen before me. It agrees minutely with his plate; and is also the specimen from which Lawrence's description in the General Report was taken.

(varieties A, &c.) are really the progressive stages of the same individuals. I do not think that even the dusky stage constitutes a distinct "variety," (*i.e.*, the birds remaining in that state all through their lives;) much less the other stages. I am of opinion that every Jäger, before arriving at full maturity, passes through each of these states: beginning with a rufo-rayed plumage—to be presently described—passing from that next into the dusky; and then assuming successively the other stages above characterized. The only question is this: What age, sex, or season is this dusky stage characteristic of? I think that it comes in next after the very young rufo-rayed plumage, for this reason. We find these dusky birds to be generally less robust than the others; with weaker bills, less elongated central tail feathers, and parti-colored tarsi. Now it is well known, that the younger the bird, the smaller it is, the shorter are the central tail feathers, and the more yellow the tarsi. Another argument, by analogy, is that the *S. parasiticus* is found in exactly the same unicolor state; and from a great number of species it can be proved, I think, that in that species it supervenes directly from the rufo-rayed plumage. [See remarks under *L. parasitica*.]

The following is the plumage of birds of the year:

Young of Year.—Bill much smaller and weaker than in the adult, light colored to beyond the nostrils, when it becomes brownish-black. Feet and toes mostly bright yellow, the terminal portions of the latter black. The whole body is everywhere transversely waved with dull rufous. On the head, neck and under parts this rufous forms the predominating color; and the bands are exceedingly numerous, of about the same width as the intervening dark color. On the flanks and under tail coverts the bars become wider, and almost white in color. On the back and wing coverts the brownish black is the predominating color; and if any rufous is present, it is merely as a narrow edging to the feathers. The under wing coverts have irregularly-angular transverse waves of brownish black and white. The remiges and rectrices are brownish black, darker at their tips; fading into whitish towards the bases of their inner vanes. On the head and neck the light rufous decidedly predominates, and seems indistinctly but thickly nebulated with dusky; this dusky forming a conspicuous spot just at the anterior canthus of the eye. (In this plumage the bird is the *Stercorarius striatus* of Brisson and the *Larus crepidatus* of Gmelin and Latham.)

There can be no doubt that the *Stercorarius striatus* of Brisson, and the *Larus crepidatus* of Gmelin and Latham, refer to this species in the very immature state of plumage just described; when the bird is considerably smaller than when adult, and is wholly rayed with rufous and dusky, with white spaces at the bases of the wing and tail feathers. The *Stercorarius crepidatus* of Vieillot, (1817,) however, is the true *parasitica*, as is also the *Lestris crepidata*, of Degland, 1838, and of Schinz, 1840. The *Lestris crepidata* of Brehm (1823) is the young of the *Buffoni*. (Vide synonyms of these species.)

Latham in his Index, page 819, gives a "*Larus crepidatus* var. β ," which is of course also to be referred to the young *pomarinus*.

The *Larus parasiticus* of Meyer and Wolf is, I believe, the only instance of the application of that specific name to this species. The other synonyms of the species do not require any special notice, as they are quite plain and uncomplicated.

By most authors the *Catharacta cephus* of Brännich is considered as referring to the long-tailed species. I must confess, however, that I can hardly discover grounds for such an identification of this name; and am rather inclined to the opinion that his *cephus* is based upon the young *pomarinus*; as are the *crepidata* of Gmelin and Latham, and the *striatus* of Brisson. Let us look at the description for a moment. It is evident, from almost every paragraph of it, that he had in view a young bird of the year,—in the state 1863.]

when they are transversely rayed with dusky and rufous,—paler on the abdomen, and have the bases of the quills and rectrices white. The only point is to determine of what species it is the young. Regarding its size, Brünnich compares it with his *Catharacta skua*, saying, that it is much smaller than that species, and “*Magnitudo parasiticae*.” The young of the year of *pomarinus* is more nearly of the size of an adult of *parasitica*, than is the young of the year of the long-tailed species. The description of the colors, form, &c., which follows, agrees precisely with those of the young *pomarinus*; and when we remember that at that date the differences between the common and long-tailed Jägers were not recognized, the two species being confounded together by authors generally, (except Brisson;) it does not appear by any means certain that Brünnich had the long-tailed species in view in drawing up the description of “*cephus*.” Had that been the case, he would probably have compared it with *parasitica* rather than with *skua*. Moreover, Latham, in his description of his *Larus crepidatus*, which is the young *pomarinus*, gives “*cephus*, Brünn.” as a synonym of that species.

Upon the whole, therefore, while I by no means insist upon the reference of the name under consideration to the *pomarinus*, I merely wish to show that it very possibly belongs to it: and that [the description is too vague and uncertain to justify the use of the name for either of the species. It is for this reason that I have adopted Boie’s name “*Buffoni*” for the long-tailed Jäger.

Having always professed a rigid adherence to the great law of priority in questions of nomenclature, I am, perhaps, in the present instance, rendering myself liable to be taken to task for not employing the name “*crepidatus*” of Gmelin and Latham (1788-90) for this species instead of *pomarinus* of Temminck, since the former name is in all probability based upon this species. The description is, however, short and unsatisfactory, and is, moreover, based upon the young bird of the year; and, though there cannot really be much doubt as to the species which these authors had in their minds in preparing their descriptions, still I think in view of the above considerations, that it will hardly be expedient to supersede so definite, long-known and universally employed a name as *pomarinus*. At the same time, should any one else see fit to do so, I would in future writings unhesitatingly follow his example.

4. STERCORARIUS PARASITICUS Gray ex Brünn.

?*Sterna rectricibus duabus internis longissimis*, Linn., Fn. Suec., No. 129.

?*Larus rectricibus duabus internis longissimis*, Linn., S. N., 1748.

Catharacta parasitica, Brünnich, Ornith. Borealis, 1764, 37.

Larus parasiticus, Linnæus, Syst. Nat., 1766, i. 226. Gmelin, Syst. Nat., 1788, i. 601. (Num Lath.? qui me judice potius ad longicaudatum Briss spectat.)

Catharacta parasitica, Retzius,* Fauna Suecica, 1800, 160.

Catarractes parasita, Pallas, Zoog. Rosso-Asiæ, ii. 1811, 310.

Lestris parasita, Keyserling et Blasius, Wirbelth. Europ., 1840, i. 240.

Schlegel, Rev. Crit. Ois. Eur., 1844, 85. Bonaparte, Cat. Met. Ucc. Europ., 1842, 80. Des Murs, Traité d’Oologie Ornith., 1860, 551. Bonaparte, Rev. Crit. Degland’s Orn. Eur., 1850, 202.

* It is difficult, perhaps impossible, to say whether the citations of the authors before 1800 really refer to this species, or to the long-tailed Jäger. I have, however, placed them under the head of *parasitica*, for this reason: Retzius in his edition of the Fauna Suecica (of 1800) gives them as synonyms of his *parasitica*, of which his description is, “*Rectrices 6, 6, (i.e., the central pair) cæteris 4 poll. longiores*,” thus clearly referring to the true *parasitica*. Descriptions of previous authors had mostly been merely “*Rectricibus medietis longissimis*,” whence the uncertainty. Retzius, however, is in error in adducing *Stercorarius longicaudatus*, Briss., as a synonym of *parasitica*.

Lestis parasitica Haum. N. V. D. 1840 VII, p. 506; pl. 272-3.
~~and Syn. p.~~

Lestis parasitica. "Boie Reris in Norwegen, p. 129." (Haum)
"Nilsson, Orn. Suecia, II p. 181" "

* Haumann says that L. crepidatus^{in Lestis} is the "parasitica",
and gives Cath. cephus Brinn also as the young.

Stercor. parasiticus, Schaeffer, Museum ornith.¹⁷⁷⁹ p. 62 ^(Forsk.) p. 37

Stereocaira austrochama.

Stereoc. Bries p. 150.

L. tris. Richardsoni Dilka Myz. 7, p. 315, pl. CXXIV, f. 293.
Gerard, B. L. D. 184-, p. 367.
Rev. Syn. p. ~~72~~B 332.

- Lestris parasitica*, Illiger, Prodomus, 1811, 273. Temminck,* Man. Ornith., 1820, ii. 796, (duæ species confusæ sunt.) Faber, Prodomus Island. Orn., 1822, 105, (Nonne duæ species confusæ?) Brehm, Naturg. Europ. Vög., 1823, 744. Kaup, Sk. Ent. Eur. Thierw., 1829, 47. Lesson, Traité d'Ornith., 1831, 616. Schinz, Europ. Fauna, 1840, i. 390. Bonaparte, Conspectus Avium., 1856, ii. 208.
- Lestris Richardsonii*, ("Swains.") Temminck, Man. Orn., iv. 1840, 499. (Sed non Swains. quæ potius species distincta.) Nuttall, Man. Ornith., ii. 1834, 319. Audubon, Ornith. Biograph., iii. p. 503; Audubon, Synopsis, 1839, 332. Audubon, Birds America, 1844, vii. 190, pl. 452. Giraud, Birds L. I., 1844, 367. Schinz, Europ. Fauna, 1840, i. 392. Thompson, Nat. Hist. Ireland, 1851, iii. 394.
- Cataractes Richardsoni*, Macgillivray, Man. Orn., ii. 1842, 257.
- Catharacta coprotheres*, Brünnich, Orn. Borealis, 1764, 38, No. 138. In ætate fusco-unicolore.)
- Lestris coprotheres*, Des Murs, Traité d'Oologie Ornith., 1860, 551.
- Lestris parasitica* var. *coprotheres*, Bonaparte, Cons. Av., 1856, ii. 209.
- Stercorarius* ———, Brisson, Ornith., vi. 1760, (nomen specificum nullum.)
- Stercorarius crepidatus*, Vieillot, Nouv. Dict. d'H. N., xxxii. 1819, 155. (Sed non *Larus crepidatus*, Gmel., Lath., qui potius juvenis *Lestris pomarinus*, Temm.)
- Stercorarius cephus*, ("Leach,") Swains. et Richardson, F. B. A., ii. 1831, p. 432. Stephens, Shaw's Gen. Zool., 1825, xiii. 211, pl. 23. Degland, Ornith. Europ., 1849, ii. 295, (nec auct.)
- Stercorarius parasiticus*, Selys-Longchamps, Fauna Belg., 1842, 155. Gray, Genera Birds, iii. 1849, 652. Lawrence, Gen. Rep. Birds N. A., 1858, 839. Coes, Proc. Acad. Nat. Sci. Philada., 1861, p. 243.
- Lestris crepidata*, Degland, "Mem. Soc. Roy. de Lille, 1838, 108." Juvenis. Schinz, Europ. Fauna, 1840, i. 390. Juvenis.

Habitat.—Coast of America and Europe, more particularly in higher latitudes. Interior of Arctic America.

Pursuing the question of the general "theory of variation" in this genus, it may be well to examine closely the various stages of this its typical species. The exceedingly rich series in the Smithsonian collection enables me to trace it through all its variations.

Young of the Year in August.—Size considerably less than that of the adult, form every way more delicate. Wings more than an inch shorter; bill and feet much slenderer and weaker. Bill in some specimens light bluish horn, in others greenish olive, the terminal portion brownish black. Tarsi and greater part of the toes yellow. The bird is every where rayed and barred with rufous and brownish black. On the head and neck the rufous is of a very light ochraceous tinge, and is by far the predominating color; the dark only appearing as a delicate line along the shaft of each feather. There is an aggregation of the brown into a spot at the anterior canthus of the eye. Proceeding down the neck to the back, the longitudinal lines become larger, and gradually spread wider and wider, until between the shoulders they occupy the whole of each feather, except a narrow border of rufous; which latter is of a deeper tint than on the head. Passing down the throat to the breast, the rufous becomes decidedly lighter,—almost whitish,—while the brown, which on the throat exists only as a light longitudinal line, changes on each feather to transverse bars of about equal width with the light rufous bars with which it alternates. This pattern prevails over the whole under

* This is a combination of *parasitica* and *Buffoni*, as shown by the description and indiscriminate citation of synonyms. This error Temminck corrects in his edition of 1840, (pp. 493, 499, 500,) where he recognizes the two species and describes them accurately: but unfortunately calls the *parasitica*, "*Richardsoni*," and the *Buffoni*, "*parasitica*."

parts,—the transverse bands being broadest on the flanks and under tail and wing coverts, narrowest in the middle of the belly. The primaries are brownish black, narrowly tipped with rufous, their shafts yellowish, their inner webs fading basally into white. The tail has the same coloration as the wings. The central feathers project about three-fourths of an inch.

As the bird above described grows older, the bill and feet become stouter, the cere better developed; while the rufous everywhere gives way to the darker color. No special stage can be characterized, however, until the rufous is far outweighed by the dusky. Then we have—

(No. 18652).—Size and general proportions nearly those of the adult. Bill and cere perfectly formed; feet mostly black, but with some yellow blotches. The upper parts are unadulterated with any rufous bars; the deep brownish-black pileum has appeared, and the sides of the neck have obtained their yellow nuance, which contrasts conspicuously with the fuliginous background. Evidences of immaturity, however, are found on the under parts, where the dark color is mixed with illy-defined transverse bars of ochraceous. Rufous is also found at the bend of the wing, and on the under wing and tail coverts. The primaries are still whitish baso-externally, as are also the rectrices. The central rectrices project $2\frac{1}{2}$ inches, and have the tapering form of those of the adults.

By the disappearance of the little rufous mentioned above, we have arrived at a very marked and decided stage,—viz :

(No. 20362).—With the size and proportions of the adult. Wholly deep dusky; darker and more plumbeous superiorly; lighter, and with a fuliginous tinge inferiorly; the pileum quite black; the latero-nuchal yellow, well pronounced; the remiges and rectrices quite black; feet black.

Having reached this perfect dusky stage, we will go back again to the young plumage first characterized, and show how specimens occasionally seem to proceed at once towards the adult condition with the white under parts. For example—

(No. 2754).—The juvenility of the specimen is attested by its small size, delicate bill and feet, little projection of the central rectrices, general mollipilose condition of plumage, &c. The rufous of the very young bird, instead of giving way everywhere to dusky, yields to this color only on the upper parts and crown; on the sides of the head, neck, and the whole under parts, whitish being the predominating color,—the continuity of this last being interrupted by indistinctly marked dusky bars. The yellow of the sides of the neck has not yet appeared. There is the same white space on the bases of the wings and tail as exists on the very young. The central tail feathers only project about $1\frac{1}{2}$ inches.

By an attentive consideration of the preceding facts, it will be evident that we have found the same very young plumage to change gradually through one series of specimens into the fusco-unicolor state; through another series into a stage which tends to pass directly into the normal plumage of the fully adult bird, without going through this dusky epoch. What can we deduce from this perplexing fact? Does one *sex* assume this dusky plumage at a certain age, and the other not? Does this dusky state constitute the normal adult plumage of one sex? Is it a *seasonal* feature, which both sexes return to at certain periods in each year?—or, finally, does it constitute a purely accidental, but constant *variety*? Authors of weight are divided on each of these points.

I reject entirely the last hypothesis,—viz : that some birds attain to this dusky stage and retain it during their lives, though they may have sprung from normally colored parents, and have normally colored progeny. Whatever age or season, or whichever sex this state of plumage indicates, I think there can be no reasonable doubt that it is a normal and constant stage which every individual of one (or both?) sexes passes through or attains to, in its

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progress towards maturity. The only question is, what age is to be assigned to this dusky state, and whether one or both sexes participate in it.

Leaving now speculation for facts, we have yet to notice the mature bird. Taking either the dusky state (No. 20362,) or No. 2754, we find that both tend to produce the following plumage:

Nearly mature, (No. 20144.)—Size and form of the adult. Pileum and latero-nuchal region, and whole upper parts, as in the adult. The under parts white (as in the adult), but clouded everywhere with dusky patches, most marked across the breast, on the sides, the flanks, and under tail coverts, and leaving the middle of the belly and throat nearly pure. Varying degrees of this dusky nubilation approach in some specimens nearly to the uniform dusky above characterized; in others fade almost into the pure white of the adult, —connecting the two ages perfectly and uninterruptedly. The tarsi of those specimens most dusky have small yellow blotches; the others not.

Now, by the complete obliteration of these dusky cloudings on the throat, breast and belly, and its increased intensity on the under tail coverts and abdomen as far as the flanks, we arrive at last at the

Adult, perfect plumage, (No. 16802).—Bill a little shorter than the head or tarsus, about equal to middle toe without the claw; stout, about as high as broad at the base. Cere longer than the nail. Culmen broad and flattened, with a longitudinal groove on each side. Nostrils as in the other species. Curvature of culmen and tomia very gradual. Gonys short, about straight; rami very long, a little concave; eminentia symphysis little marked. Striæ and sulci as in the other species. Tarsi about as long as the middle toe and claw, moderately stout, somewhat roughened supero-posteriorly, but not nearly as much so as in *pomarinus*. Scutellation and reticulation of tarsi, toes, and interdigital membranes as in the other species. Tail moderately long, slightly graduated, the lateral feathers broad quite to their apices, which are somewhat truncated, the shaft slightly protruding as a small mucro; the central pair projecting three to four inches; rigid; not losing much of their breadth until about four inches from their ends, when they commence to converge regularly to a quite acute apex. They have nothing of the filamentous character of those of *Buffoni*. Wings long, powerful, their rhachides rigid, their apices somewhat acute. Pileum, occipital crest, whole upper parts, deep brownish black, with a somewhat slaty tinge, and a slight but appreciable metallic nuance; this color deepening into quite black on the wings and tail. Rhachides of primaries and rectrices whitish, except at their tips; the inner vanes albescent baso-internally. Chin, throat, sides of head, neck all round and under parts to the vent, pure white; the feathers of the latero-nuchal region rigid, acuminate, with disconnected fibrillæ, light yellow. Under tail coverts like the upper parts, but somewhat of a fuliginous tint; the line of demarcation from the white of the abdomen very trenchant.

Dimensions of fully adult.—Bill above 1.40 inches; height or width at base, about .50. Wing, from flexure, 13.00; tarsus, or middle toe and claw, 1.80; tail 5½, its centre feathers nearly 9.00.

Dimensions of young of year.—Bill above 1.30; height or width at base .40; wing 12.00; tarsi, or middle toe and claw, 1.70; tail 5.00; central tail feathers not quite 6.00.

STERCORARIUS RICHARDSONI Coues ex Swainson.

Lestris Richardsoni, Swainson, Fauna Boreali-America, 1831, ii. p. 433, pl. lxxiii. sed non auctorum.

Habitat.—Interior of Arctic America.

DIAG.—*S. Stercorario parasitico* similis; sed major, rostro, tarsis, alisque longioribus; caudâ magis productâ et rotundatâ, rectricibus latioribus.

This species is treated of at length in the beginning of the present paper. 1863.]

6. STERCORARIUS HARDYI Coues ex Bonap.

Lestris Hardyi, Bonaparte, Comptes Rendus Acad. Sciences, 1856, p. 20. Tab. Longip. species 5. Bonaparte, Conspectus Avium., ii. 1856, 210.

DIAG.—“*Similis Lestrído parasiticæ*; sed minor, et rostro magis compresso; rectricibus elongatis mediis apice rotundatis.”—(Bp.)

Habitat.—Southern oceans, between Philippine and Sandwich islands.

I am only acquainted with this species through the notices of Bonaparte, above cited. The diagnosis is copied from the *Conspectus Avium*. The species is evidently very closely related to the *parasitica*, if it be really distinct from it.

7. STERCORARIUS SPINICAUDA Coues ex Hardy.

Lestris spinicauda, “Hardy.” Bonaparte, Comptes Rendus Ac. Sciences, 1855. Bonaparte, Conspectus Avium, 1856, ii. 210.

DIAG.—“*Similis L. Hardyi et parasitico*; sed etiam minor *Lestrído ceppho*; cauda truncata; rectricibus mediis lineari-acutis, rachide denudata, rigida, pollice et ultra cæteras superantibus; rostro brevi, robusto.”—(Bp.)

Habitat.—Coast of Africa, near St. Helena.

A species with which, like the *S. Hardyi*, I am autoptically unacquainted. If, however, the above characters really obtain, they would seem abundantly sufficient to distinguish it. The diagnosis is copied from Bonaparte.

8. STERCORARIUS BUFFONI Coues ex Boie.

Stercorarius longicaudatus, Brisson, Ornith., 1760, vi. 155. Vieillot, Nouv. Dict. d'H. N. 1819, xxxii. 157. Degland, Ornith. Europ., 1849, ii. 298. Selys-Longchamps, Fauna Belg., 1842, 156.

Lestris longicaudatus, Thompson, N. H. Ireland, iii. 1851, 399.

Cataractes longicauda, Macgillivray, Man. Orn., ii. 1842, 258.

??*Catharacta cepphus*, Brünnich, Orn. Bor., 1764, 36.

Cataractes parasitica, Macgillivray, Brit. Birds, v.

Lestris cephus, Keyserling et Blasius, Wirbelth. Europ., i. 1840, 240. Bonaparte, Cat. Met. Ucc. Eur., 1842, 80. Bonaparte, Rev. Crit. Degland's Orn. Eur., 1850, 202. Bonaparte, Conspectus Avium., 1856, ii. 209. Des Murs, Traité d'Oologie Ornith., 1860, 551.

Stercorarius cepphus, Gray, Genera Birds, iii. 1849, 652. Lawrence, Gen. Rep. Birds N. A., 1858, 840. Coues, Proceed. Acad. Nat. Sci. Philada., 1861, p. 243.

?*Larus parasiticus*, Latham, Index Ornithologicus, ii. 1790, 819.

Lestris parasitica, Temminck, Man. Orn., iv. 1840, 501. (Sed non *Larus parasiticus*, Linn., Gmel. et auct.) Lesson, Man. Orn., 1828, ii. 388. Swainson and Richardson, F. B. A. 1831, ii. 430. Nuttall, Man. Orn., 1834, ii. Audubon, Orn. Biog., 1839, iii. 470. Audubon, Synopsis, 1839, 333. Audubon, Birds Amer., 1844, vii. 192, pl. 452. Giraud, Birds Long Island, 1844, 364.

Lestris Buffoni, “Boie, in Meyers' Taschenb., 1810, iii. 212.” Boie, Isis, 1822, 562 et 576. Bonaparte, Synop. Birds N. A. 1826, No. 306. Lesson, Traité d'Ornith., 1831, 616. Kaup, Sk. Ent. Eur. Thierw., 1829, 47. Schinz, Europ. Fauna, 1840, i. 391. Schlegel, Rev. Crit. Ois. Eur., 1844, 85.

Lestris Lessoni, Degland, “Mem. Acad. Roy. de Lille, 1838.” Juvenis. Schinz, Europ. Fauna, 1840, i. 392. Juvenis.

Lestris crepidata, Brehm, Naturg. Eur. Vög., 1823, 747. Nec Gm., nec Lath., nec Vieillot. *nec Degland & nec Schinz*

Adult, breeding plumage.—Bill dusky, its nail almost black. Tarsi deep leaden blue; tibiae, phalanges, interdigital membranes and claws black. Occiput suberected, more decidedly than in any other species, forming a calotte of brownish black; which color extends downwards on the cheeks,

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"Stereocaria longicauda" Degland
Plantus stereocarius "Klein Ives p. 148 no. 10. " (*S. (Bris)*)

Lestris crepidata Nauman N. V. D. VII 1840 p. 534, pl. 274
Lestris Buffoni DeKay N. Y. 7, 1844 315 pl. CXXXIII fig 297
Lestris namata Aug. Pyn, 183 p. 333.

Lestris crepidata "Brehm, Beiträge, III p. 861." (Nauman)

the feathers before and below the eye, and on the sides of the bill, being of this color. Neck all round, but especially the sides of the head and the peculiarly formed feathers on the latero-nuchal region, light straw yellow. Whole upper parts, with upper wing and tail coverts deep slate; which, on the primaries, secondaries, lateral tail feathers and distal half of central pair, deepens into a pure lustrous brownish black. Under surface of wings and tail deeper slate than the back, but not so deep as the upper surfaces. Chin, throat and upper breast white; gradually becoming obscured with dusky plumbeous, which deepens posteriorly, so that the abdomen and under tail coverts are nearly as dark as the back. Rhachides of first two or three primaries pure white, deepening into brownish black at their extreme apices; of the other primaries, and of the tail feathers (including the central pair) brown, except just at the base, deepening into quite black terminally. The inferior surfaces of all the rhachides are white for nearly their whole length.

Length of culmen 1.15 inches; gape 1.70; cere .60; unguis about the same; gonys .30; from feathers on sides of bill to tip .90; wing 12.50; tail 6.25; central pair 14.00 to 16.00; the projection 8.00 to 10.00 inches; tibiae bare .75; tarsus 1.60; middle toe without claw 1.40.

Habitat.—Sea coasts of America and Europe, particularly in the higher latitudes. Interior of Arctic America.—(Kennicott.)

The changes of plumage of this species are strictly homologous with those of *S. parasiticus*; and it is therefore quite unnecessary to present them in this connexion.

As before remarked under head of *parasitica*, it is exceedingly difficult, if not quite impossible, to determine positively to what species the "*parasitica*" and "*cepphus*" of the older authors refer. This confusion is occasioned partly by the brief and vague diagnoses given, and partly by the fact that the two species were really confounded by authors (except Brisson) until comparatively quite a late period. Even so late as 1820 Temminck does not separate the two: his description applies to either, and the synonyms of both are indiscriminately adduced. From which state of things it results that nearly all the older names and citations may be without difficulty referred to either species. This in effect has been really done; some authors, for example, considering Brünnich's or Linnæus' *parasitica* to be the long-tailed species, and others holding a contrary opinion, until the identification of these names has become almost a matter of choice, or rather of tacit agreement among ornithologists. This is the more to be regretted since on it depends the question whether the common or the long-tailed Jäger is to be called *parasiticus*. A glance at the synonymy of the species will show that authors have been about equally divided on these points. Before the introduction of "*Richardsoni*" by Swainson, the common Jäger was usually called "*parasitica*;" but after the adoption of this name "*Richardsoni*" by Temminck, for the common Jäger, the name *parasitica* was for some years almost universally applied to the long-tailed species. In the year 1819, or thereabouts, the name of *Buffoni* was proposed by Boie for the long-tailed species, and was adopted by many writers; while others had recourse to Brisson's old name "*longicaudatus*." Within the last few years, however, the name "*parasitica*" has again reverted to the common Jäger, while the other species has been usually called "*cepphus*," after Brünnich. This identification of Brünnich's name is adopted by Gray, Bonaparte, and other writers. Our reasons for rather referring it to the *Stercorarius pomarinus* will be found under the head of the latter.

Granting, as it is undoubtedly wisest to do, that the *parasitica* of Brünnich, Linnæus and Gmelin, is really the common short-tailed Jäger, it still remains an open question to which species we are to refer the *Larus parasiticus* of Latham. I incline to the opinion that it is based upon the long-tailed species, for the following reason: Although the diagnosis is brief and unsatis-

1863.]

1810

factory, and although the synonyms of the two species are indiscriminately adduced, (thus, *e. g.*, *Larus parasitica*, Linn. and *Catharacta parasitica*, Brünn., with *Stercorarius longicaudatus*, Briss., &c.,) yet in his further description he says of it, "21 pollices longus." The common Jäger never attains to this dimension.

Latham commits the error of giving *Stercorarius longicaudatus*, Briss., as the male, and *Stercorarius* —, Briss., (without a specific name,) as the female of his species; whereas, these two citations really refer to the two distinct species.

The specific name "*longicaudata*" of Brisson (1760) being untenable for obvious reasons,—"*cephus*" of Brünnich (1764) being too indefinite to warrant its employment,—"*parasitica*" of Brünnich (1764) being used for the common Jäger,—the first definite distinctive name for the long-tailed species appears to be "*Buffoni*" of Boie, (1819.) This specific appellation we accordingly adopt.

NOTE.—The present paper completes a series of brief reviews of the three most important of the four subfamilies of the Laridæ,—viz.: the Larinæ, Sterninæ and Lestrudinæ. In conducting an investigation into the characters and the bibliography of these groups, with special reference to North American forms, it has been thought expedient to issue in advance a brief prodromus, so to speak, of each subfamily as soon as its examination was completed. Combining the results arrived at in the investigation of each of these groups, and making whatever additions or modifications future research may dictate, the writer hopes before long to present a more complete and elaborate Monograph of the North American forms of the Laridæ. It is contemplated to present the anatomical as well as the external characters, both of the higher groups and of the more marked species; the changes of plumage, dependent upon either age, season, sex, or pure accident, which examination of very extensive series may show; together with the bibliography of each species, and a discussion of doubtful points of nomenclature and relationship. The Monograph will be illustrated by colored plates of the bills, wings, feet, &c. of most of the species, showing exactly wherein one differs from another; and no pains will be spared to render it a complete exposition of the present state of our knowledge of this family of birds.

Synopsis of the MARINE INVERTEBRATA collected by the late Arctic Expedition, under Dr. I. I. Hayes.

BY WM. STIMPSON, M. D.

The collections of Dr. Hayes, as might be expected from the thorough search to which the Arctic regions have lately been subjected, and the characteristic paucity of forms existing there, embrace few novelties. They possess, however, great interest, from having been found in great part at localities much nearer the Pole than any previous expeditions have succeeded in reaching on the American side of the Arctic circle. They include some species hitherto found only on the European side. And, we may add, the number of species collected by Dr. Hayes is greater than that brought back by any single expedition which has yet visited those seas, as far as can be judged by published accounts.

Of the localities mentioned below, *Port Foulke* and *Littleton I.* are on the eastern or Greenland shore of Smith's Straits, in lat. 78½°. *Cape Faraday* is on the west shore of the same Straits, in lat. 79° 45'. *Godhavn* is at the southern end of Disco Island, in lat. 69° nearly.

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S. Buffoni, "Boie", Meyer und Wolf. Taschen. Vogl. Deutsch, 1810, iii: 212

Rhynchops.

Genus Rhynchopsalia Boie p. 222 (Species on following page)

Rhynchops nigra L. S. N. 17 28 X 5 in 71 Sp 1

NATURAL HISTORY.

LIST OF BIRDS ASCERTAINED TO INHABIT THE DISTRICT OF COLUMBIA, WITH THE TIMES OF ARRIVAL AND DEPARTURE OF SUCH AS ARE NON-RESIDENTS, AND BRIEF NOTICES OF HABITS, ETC.

BY ELLIOTT COUES AND D. WEBSTER PRENTISS.

FROM the central situation of the District of Columbia, with regard to the northern and southern sections of the country, together with the varied character of surface which it presents, it might be expected to possess a rich and interesting *avi-fauna*. Such has been found to be the case. It seems to be on the natural dividing line between the true northern and southern faunas, it being impossible to decide which takes precedence. Therefore, if we except a few peculiarly favored regions, we are enabled to present a more extensive list of species inhabiting the district than has been given for almost any other locality in eastern North America.

Though the number of birds which are resident throughout the year and those which breed here is considerable, they are few in comparison with those which pass through during their spring and autumn migrations, and remain for a longer or shorter time each season. The number of species, indeed, is not greater, but the individuals of each are very numerous. It is on this account that for a month or so during the spring and autumn—from about the 20th of April to the 20th of May, and from the 1st of September to the middle of October—the collector is so amply repaid for his pains, while at other times ornithologizing, except for some particular birds, is hardly worth the time and trouble. So numerous, indeed, are individuals of most of the migratory species that at the height of the season in spring we have collected, in a walk before breakfast, from forty to fifty specimens of various species of warblers, thrushes, flycatchers, finches, &c. As an instance of the number of birds which pass through the District on their way north to breed, compared with those which remain with us during the summer, may be cited the wood-warblers, or *Dendroicee*. Of the twelve or thirteen wood-warblers found more or less abundantly in the spring and fall, only three are known to breed here. The same might be affirmed of other birds, as the thrushes, flycatchers, sandpipers, &c.

Though there is included in the list only those species which have been positively detected, there are some of which specimens have been obtained, and yet are not entitled to be considered as inhabitants of the District. These may be divided into three classes: First, those which visit us in severe winters, being driven south, out of

their usual range, by scarcity of food or other causes ; such are the *Nyctea nivea*, *Astur atricapillus*, *Collyrio borealis*, *Pinicola canadensis*, and others. Second, those which visit us in July and August, which are mostly the young of species breeding further south. Examples of these are to be seen in the *Rhynchops nigra*, some species of *Ardeidae*, &c. In the third class are to be ranged those whose appearance is totally accidental, dependent upon no fixed habit of the bird. Thus, species of *Thalassidroma* and *Puffinus* have been seen upon the Potomac, and a *Milvulus* (*M. forficatus*, probably) and the *Chamaepelia passerina* have been detected.

The great mass of the birds which pass through the district in their spring migrations do not stop to breed before reaching, at least, the New England States, and probably the majority go still further north, spreading through the Canadas and into British America to the region around Hudson's bay. Our regular winter visitants, as the *Junco hyemalis*, *Spizella monticola*, and the *Anatidae* generally, do not usually stop much short of Labrador and the regions of that latitude. Other species, however, breed with equal readiness in almost any latitude. Thus the *Dendroica aestiva* is very common through the summer in the district, and doubtless even further south ; while it breeds also in very high latitudes in British America. During the winter these migratory species mostly retire to the Antilles, or into Central America, though many linger in the Gulf States along our southern border. The manner in which these extensive migrations are performed varies, doubtless, with different groups of birds, but it is very difficult to conceive how some weak and short-winged species can perform the immense journey. Some accomplish the distance by continually flying from forest to forest, and from hedge to hedge ; while others mount directly high into the air, and uninterruptedly continue their flight until hunger or weariness compels them to desist for awhile. This kind of migration is performed by some species wholly in the night time. Some of the small insectivorous birds have been noticed just at daybreak to descend from a great height, and after remaining motionless for sometime, as if to recuperate their energies, search diligently for food, and again resume their flight towards evening. The distance at which the notes of birds flying overhead can be heard is truly surprising. We have heard distinctly the mellow notes of the *Bob-o'-link* while the bird itself was entirely beyond our range of vision. The loud "honking" of wild geese while migrating is well known.

A circumstance which has considerable influence on the appearance of birds in the immediate vicinity is the presence of a large city. This is most strikingly shown in the case of the ducks and other water fowl, to which the attention of the sportsman is especially directed. The peculiar character of Chesapeake bay and its tributaries render them the favorite winter resort of nearly all the species of *Anatidae* ; but the incessant persecutions to which these birds are subjected have effected a material diminution of their numbers, and caused a great part of them to retire to the bogs and inlets of more southern shores. The same is true, though less markedly, of various

shy and solitary birds, (as, for example, the *Hylatomus pileatus*,) which are gradually retiring with the clearing up of the forests to more mountainous and inaccessible regions. Nevertheless, the pertinacity with which some birds hold their ground is surprising. Thus the common partridge, though so continually persecuted by sportsmen, is still very numerous, even in the immediate vicinity of the city. A total change of habit by civilization, sometimes to be observed, is extremely interesting. There can be no doubt that before the settlement of the country the *Chaetura pelasgia* bred in hollow trees. This habit is now totally lost, the bird finding chimneys better suited to its wants. In like manner, the *Hirundo horreorum* now breeds altogether on the rafters and beams of barns and outhouses, while the *H. lunifrons* is gradually abandoning the sides of cliffs for the convenient situations afforded by the projecting eaves of buildings. The *Progne purpurea* always gives preference to the boxes now everywhere placed for its accommodation.

With these brief and very cursory remarks, which might be greatly extended did space permit, we proceed to the list of the species ascertained to inhabit the District. Our observations, from which the paper has been prepared, have extended over a period of nearly five years, during which all the time that could be spared from other occupations has been devoted to the study of birds. No species has been admitted which has not been actually detected in the District or its immediate vicinity. A few of whose existence there can be little or no doubt, are included in brackets, but still are not counted in the list. The date given for the arrival and departure of any bird is the mean of those observed during each successive year, since the appearance and disappearance of birds, depend somewhat on the early or late advance of the season. It is regretted that the account of some of the water birds is so scanty and incomplete; but it is hoped that the very full details of most of the land birds will in a measure atone for the deficiency in this respect.

1. *Cathartes aura*, (Linn.,) Ill.—Turkey Buzzard. Permanent resident. Abundant. Not ordinarily gregarious, but collects in great numbers where offal of any description is exposed.

2. *Falco columbarius*, Linn. Pigeon Hawk. Rather rare, but few having been observed. Very shy. Sometimes exposed for sale in the market.

3. *Falco (Tinnunculus) sparverius*, Linn. Sparrow Hawk. Resident. Abundant. Generally found in open fields, about hedges, stumps, dead trees, &c.

4. *Astur atricapillus*, (Wils.,) Bon.—Goshawk. Very rare; only occasionally observed during the winter months.

5. *Accipiter cooperi*, Bon.—Cooper's Hawk. Resident. One of the most common hawks. Frequents chiefly open fields, searching for mice, small birds, &c.

6. *Accipiter fuscus*, (Gm.,) Bon.—Sharp-shinned Hawk. Resident. Very abundant; and the least shy of the hawks. Frequents hedges, ditches, brier patches, &c.

7. *Buteo borealis*, (Gm.,) Vieill.—Red-tailed Hawk. "Hen Hawk." Resident. Abundant, especially in winter. Very shy and wary. Generally seen upon the largest trees in open fields.

8. *Buteo lineatus*, (Gm.,) Jard.—Red-shouldered Hawk. "Chicken Hawk." Resident. Common. Habits much like those of the preceding, with which it is generally confounded by farmers.

9. *Buteo pennsylvanicus*, (Wils.,) Bon.—Broad-winged Hawk. Very rare; only occasionally observed. Specimens have been obtained in the market.

[*Nauclerus furcatus*, Vig.—Swallow-tailed Kite. * As this bird goes considerably further north, it doubtless is to be found in the District, though we have never detected it.]

10. *Circus hudsonicus*, (Linn.,) Vieill.—Marsh Hawk. Resident. Very abundant. Generally seen over the marshes of the rivers, and the wet meadows north of the city.

11. *Aquila canadensis*, (Linn.,) Cass.—Golden Eagle. Apparently not rare; individuals being observed or taken almost every winter. Two specimens from this locality are now in the museum of the Smithsonian Institution.

12. *Halicetus leucocephalus*, (Linn.,) Savig.—Bald-headed Eagle. Not rare. Frequently seen sailing along over the river and perched upon stumps and snags upon the "flats." Resident.

13. *Pandion carolinensis*, (Gm.,) Jard.—Fish Hawk. Osprey. Common. Seen over the Potomac and Anacostia rivers, and upon the branches of dead trees overhanging their banks.

14. *Scops asio*, (Linn.,) Bon.—Screech Owl. The most abundant as well as the smallest of the owls. This as well as the other owls are comparatively seldom seen on account of their nocturnal habits.

15. *Bubo virginianus*, (Gm.,) Bon.—Great Horned Owl. "Cat Owl." Not common. Sometimes offered for sale in the market. Seldom seen, but its note often heard in woods, "making night hideous."

16. *Otus wilsonianus*, Lesson.—Long-eared Owl. More abundant than the preceding. Seldom seen. Passes the day in hollow trees, thick clumps of pines, &c.

17. *Brachyotus cassinii*, Brew.—Short-eared Owl. Very abundant. Less shy than preceding, and apparently more confused by the light of day. Has been caught in the streets of the city.

18. *Syrnium nebulosum*, (Forst.,) Gray.—Barred Owl. Rare. But a few specimens observed. Found chiefly in day time in close cedar thickets, near farm houses.

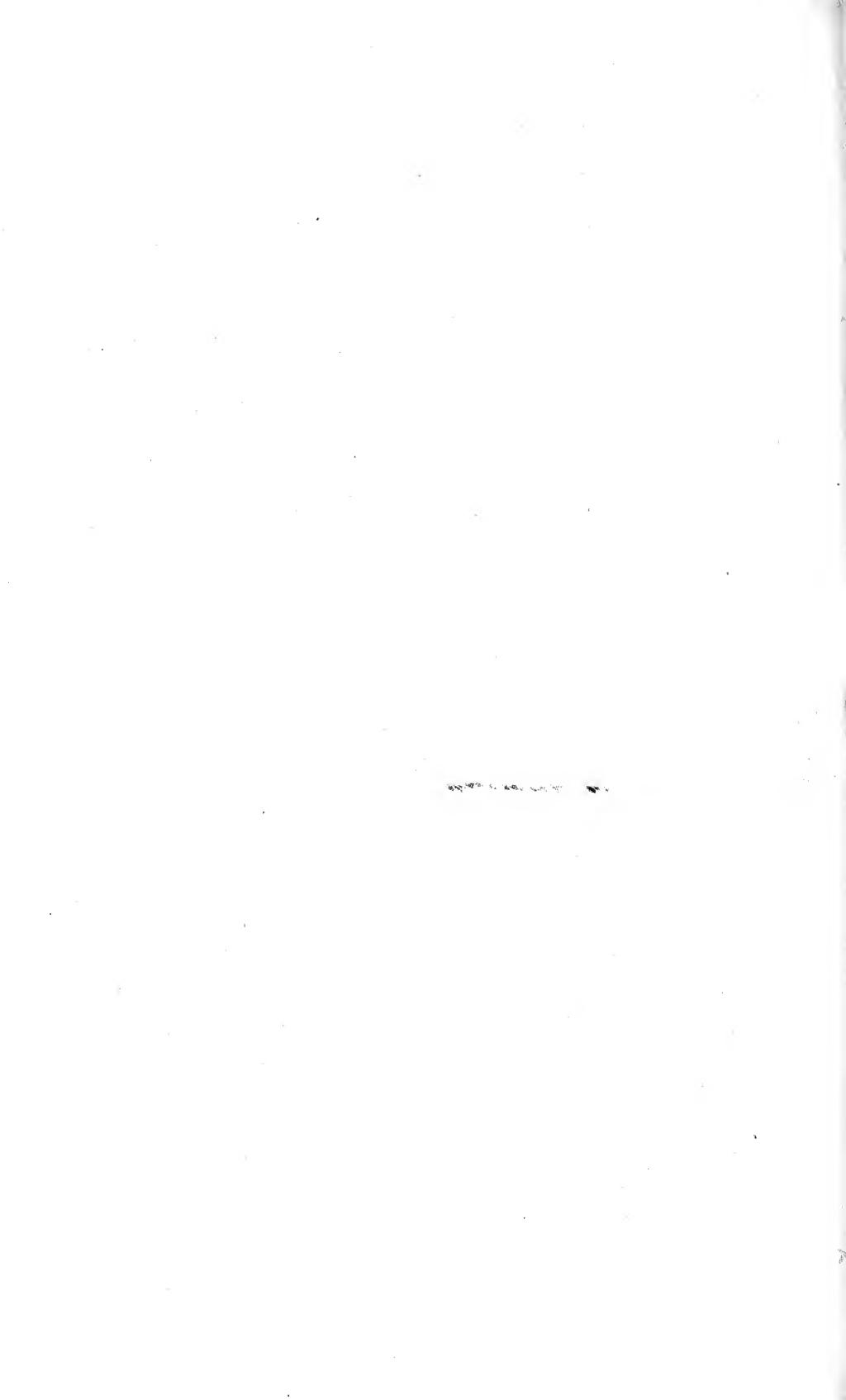
19. *Nyctea nivea*, (Daud.,) Gray.—Snowy Owl. Very rare; only occasionally observed during the severest weather in winter.

[*Nyctale acadica* may very probably be hereafter detected.]

20. *Coccygus americanus*, (Linn.,) Bon.—Yellow-billed Cuckoo. "Rain Crow." Very abundant, especially in spring and fall. Found chiefly in open woods. Breed plentifully. Fresh eggs are often found in a nest with young birds. Arrives May 1; departs late in September.

21. *Coccygus erythrophthalmus*, (Wils.,) Bon.—Black-billed Cuckoo. "Rain Crow." Less abundant than the preceding, but not at all

Not = "Buho ~~agapitensis~~"!



rare. Habits similar to those of the Yellow-billed Cuckoo. Note not so harsh and prolonged. Summer resident. Arrives May 1; departs late in September.

22. *Picus (Trichopicus) villosus*, Linn.—Hairy Woodpecker. Permanent resident. Apparently rare. General habits in common with the woodpeckers. Not at all shy.

23. *Picus (Trichopicus) pubescens*, Linn.—Downy Woodpecker. "Sapsucker." Resident all the year. Abundant. Breeds plentifully. Frequents chiefly orchards, the dead undergrowth of boggy marshes, and the more open cleared woods.

24. *Sphyrapicus varius*, (Linn.,) Baird.—Yellow-bellied Woodpecker. Resident all the year. Abundant, particularly in the fall. Frequents chiefly high open woods, but often seen in thickets and tangled copses. Very fond of the berries of the sour gum.

25. *Hylatomus pileatus*, (Linn.,) Bd.—Pileated Woodpecker. "Cock of the Woods." "Black Log-Cock." Probably permanent resident. Rare, having retired from the immediate vicinity with the clearing off of the forests. Excessively shy and wary when seen.

26. *Centurus carolinus*, (Linn.,) Bon.—Red-bellied Woodpecker. Resident all the year; rather rare, and apparently more so than formerly.

27. *Melanerpes erythrocephalus*, (Linn.,) Sw.—Red-headed Woodpecker. "Red-head." Summer resident; high open woods and orchards. The most abundant of the woodpeckers. Arrives in spring usually the last week in April; leaves about the middle of September.

28. *Colaptes auratus*, (Linn.,) Sw.—Yellow-shafted Woodpecker. "Flicker." Resident all the year. Very abundant, particularly in spring and fall, when usually seen in straggling flocks. Breeds plentifully.

29. *Trochilus colubris*, Linn.—Ruby-throated Humming Bird. Summer resident. The only Humming Bird found here. Abundant, especially in the fall. Frequent exclusively the gardens in the city, patches of wild flowers, (golden rod, &c.,) along the sides of branches. Breed plentifully in the high woods. Arrive in spring about May 1, and remain till the first approach of cool weather.

30. *Chaetura pelasgia*, (Linn.,) Steph.—Chimney Swift. Very abundant. Mostly seen in the city. Arrives second week in April; leaves towards the end of September.

31. *Antrostomus vociferus*, (Wils.,) Bon.—Whip-poor-will. Rare. Summer resident. Arrives first week in May; leaves third week in September. When suddenly startled flies off in a confused zigzag manner, unless during the breeding season.

32. *Chordeiles popetue*, (Vieill.,) Bd.—Night Hawk. "Bull Bat." Spring and autumn visitant. A few breed. Arrives May 1; leaves about October 6. Very abundant in the fall, especially just before its departure.

33. *Ceryle alcyon*, (Linn.,) Boie.—Kingfisher. Summer resident. Quite common along the banks of the rivers and Rock creek. Rather shy. Arrives the third week in March; leaves early in October.

34. *Milvulus* ———?—A *Milvulus* was seen, but, unfortunately,

not obtained, May 6, 1861, by Mr. C. Drexler. It was probably *M. forficatus*.

35. *Tyrannus carolinensis*, (Linn.,) Bd.—King Bird. “Bee Martin.” Summer resident; breeds plentifully, but the greater number go further north. Arrives second week in April; leaves late in September.

36. *Myiarchus crinitus*, (Linn.,) Cab.—Great-crested Flycatcher. Common summer resident, but most numerous in spring and autumn. Arrives third week in April; leaves third week in September.

37. *Sayornis fuscus*, (Gm.,) Bd.—Pewee. “Tom-tit.” Common summer resident, but more plentiful in spring and fall, since the greater number go further north to breed. Arrives the *first* of the spring visitants, about the first of March, and is very abundant for a month or more; in autumn becomes numerous about September 25, and does not leave till near the middle of October. Breeds in caves, about rocks, creeks, bridges, &c.

38. *Contopus virens*, (Linn.,) Cab.—Wood Pewee. Excessively abundant summer resident. Arrives last week in April; becomes very abundant in two weeks; leaves third week in September.

39. *Empidonax traillii*, (Aud.,) Bd.—Traill's Flycatcher. Rare; spring and fall visitant; perhaps a few breed. Times of arrival and departure much those of the succeeding.

40. *Empidonax minimus*, Baird.—Least Flycatcher. Spring and autumn visitant; none breed; rather common, most so in the spring. Frequents *exclusively* the margins of small streams and brooks, briar patches, &c. Arrives last week in April, remains about two weeks; arrives in autumn, third week in August, and remains till third week in September.

41. *Empidonax acadicus*, Gm., Bd.—Acadian Flycatcher. Common summer resident; the most abundant of the *Empidonaces*, and the only one that breeds here in any numbers. Arrives last week in April; leaves about September 25.

42. *Empidonax flaviventris*, Bd.—Yellow-bellied Flycatcher. Spring and autumn visitant; rather rare; perhaps some breed, specimens having been taken July 28. Arrives the first week in May; in autumn remains until third week in September. Found in same situations as *E. minimus*.

43. *Turdus mustelinus*, Gm.—Wood Thrush. “Wood Robin.” Summer resident. Many breed, but the greater number go further north. Arrives last week in April; leaves last week in October. Frequents thick and tangled woods, especially laurel brakes, &c., along the banks of Rock creek.

44. *Turdus pallasi*, Cab.—Hermit Thrush. Spring and autumn visitant; none breed. Arrives much the earliest of all the thrushes, and immediately becomes very abundant. Frequents chiefly open woods. Arrives third week in March, and remains until May; arrives in the fall the first week in October, and leaves about the third.

45. *Turdus fuscescens*, Steph.—Tawny Thrush. Spring and autumn visitant. Rather uncommon, being the rarest of the thrushes. Does not usually arrive until the first week in May; remains but a short

time; returns early in the fall. Frequents high open woods, but keeps near the ground. Shy and solitary.

46. *Turdus swainsoni*, Cab.—Olive-backed Thrush. Spring and autumn visitant; none breed. The most abundant of the thrushes, except perhaps *T. pallasi*. Have seen them in considerable flocks in the fall. Arrives the second week in April; remains but a short time. Returns in the fall, second week in September; remains till second week in October.

47. *Turdus aliciae*, Bd.—Gray-cheeked Thrush. Spring and autumn visitant; none breed. Apparently as abundant as *T. swainsoni*, more so than *T. fuscescens*. Found in similar situations with the former, with which its times of arrival and departure are nearly identical; perhaps fonder of swampy localities. (First shown to belong to the eastern Avi-fauna by ourselves. See Proc. Acad. Nat. Sci., Philada., Aug., 1861.)

48. *Turdus (Planesticus) migratorius*, Linn.—Robin. Permanent resident. A few breed, and a few remain during the winter; the greater part, however, proceed north in summer and south in winter. Most abundant in November and March. Sour gum and poke-berries (*Phytolacca decandra*) are their favorite food. Found in all localities. Many nest in the parks about the Capitol and President's House.

49. *Sialia sialis*, (Linn.,) Bd.—Blue Bird. Very abundant. Permanent resident. Disappears in severe weather in winter, but is found on warm, sunny days throughout that season, and becomes exceedingly numerous on the first opening of spring. Breeds plentifully in holes of trees and in boxes throughout the city.

50. *Regulus calendulus*, (Linn.,) Licht.—Ruby-crowned Kinglet. Spring and autumn visitant. Very abundant. None breed. In spring, from April 1 to May 10; in fall, through the month of October and first few days in November. Frequents orchards, thickets, copses, cedar patches, &c.; less frequently found in high woods. Is most numerous in the fall. Is in full song before it leaves. Spring migrations always embrace a number of both sexes, with the head perfectly plain.

51. *Regulus satrapa*, Licht.—Golden-crested Kinglet. Winter resident. Abundant from October 1 to latter part of April. None breed. Habits much the same as the preceding. Thick pine woods a favorite resort. Familiar and unsuspicious.

52. *Anthus ludovicianus*, (Gm.,) Licht.—Titlark. "Skylark." Winter resident. Abundant. Makes its appearance towards the end of October, and remains until April. Always found in restless straggling flocks, usually of considerable extent. Frequents open commons, bare meadows, ploughed fields, &c. Has a remarkable habit of frequently alighting on the roofs of houses and sheds. [Breeds in great numbers in Labrador.]

53. *Mniotilta varia*, (Linn.,) Vieill.—Black and White Creeper. "Sapsucker." Very common summer resident, but more abundant in spring and fall, as the greater number go further north to breed. Arrives first week in April, and is exceedingly numerous until May. Breeds in holes in trees. Generally found in high, open woods.

54. *Parula americana*, (Linn.,) Bon.—Blue Yellow-back Warbler.

Spring and autumn visitant. Exceedingly abundant from April 25 till May 15. Perhaps a few breed, as we have found them the first week in August. In fall abundant from August 25 to second week in October. Inhabits exclusively high, open woods, and usually seen in the tops of the trees, or at the extremities of the branches, in the tufts of leaves and blossoms. (*Albino* obtained.)

55. *Protonotaria citrea*, (Bodd.,) Bd.—Prothonotary Warbler. Exceedingly rare; perhaps only an accidental visitor. An individual seen in a swampy briar patch May 2, 1861. Probably its most northern range, if regularly found here.

56. *Geothlypis trichas*, (Linn.,) Cab.—Maryland Yellow-throated Warbler. Very abundant summer resident, breeding in great numbers. Arrives April 25, becoming exceedingly numerous on its first appearance. Remains until October. Inhabits the densest briar patches, generally in swampy situations. Never seen in high woods, seldom in orchards or hedgerows. Associates with *Cistothorus palustris*, in the *Zizania aquatica* marshes. Nest on ground.

[*G. philadelphia* is undoubtedly an inhabitant of the District.]

57. *Oporornis agilis*, (Wils.,) Bd.—Connecticut Warbler. Rather uncommon in the fall, during the month of October. Excessively rare in spring; we never have seen it in that season. Frequents old buckwheat and corn fields, searching for food among the dry, rank weeds; also low thickets in swampy places.

58. *Oporornis formosus*, (Wils.,) Bd.—Kentucky Warbler. Rare. Found chiefly in low woods with thick undergrowth, ravines, &c. Very silent, but not shy. A few breed here.

59. *Icteria viridis*, (Gm.,) Bon.—Yellow-breasted Chat. Summer resident, breeding very abundantly. Arrives the last week in April, leaves about the middle of September. Frequents exclusively most dense and impenetrable briar patches. Males exceedingly shy and difficult to procure until the females commence incubation, when they are quite the reverse.

60. *Helmitherus vermivorus*, (Gm.,) Bon.—Worm-eating Warbler. Rather uncommon summer resident, breeding sparingly. Arrives first week in May, remains till third week in September. Slow and sedate in its movements.

61. *Helminthophaga chrysoptera*, (Linn.,) Cab.—Golden-winged Warbler. Spring and autumn visitant. Very rare.

62. *Helminthophaga pinus*, (Linn.,) Baird.—Blue-winged Yellow Worm-eating Warbler. Spring and autumn visitant. Very rare.

63. *Helminthophaga ruficapilla*, (Wils.,) Bd.—Nashville Warbler. Spring and autumn visitant. Rare.

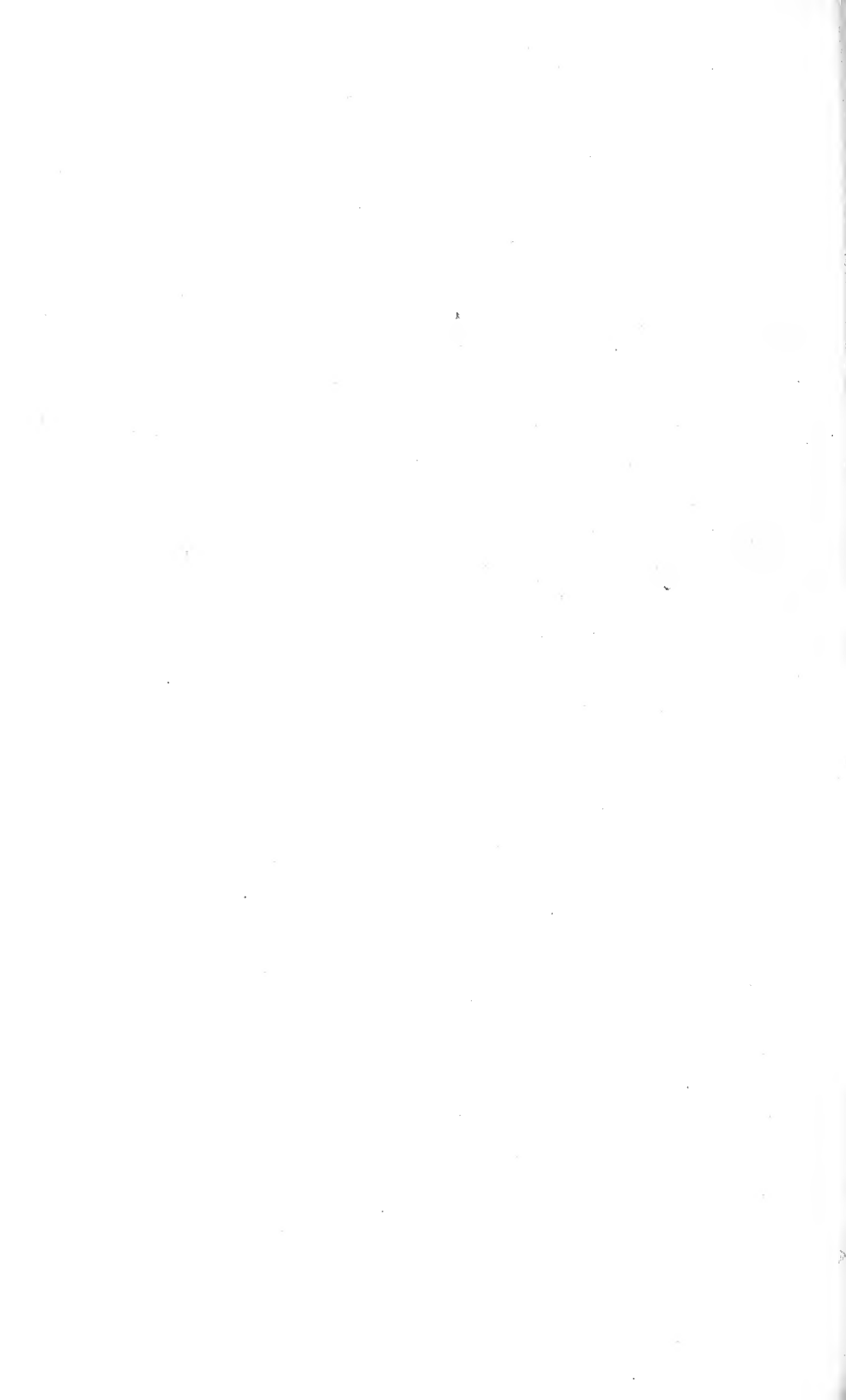
64. *Helminthophaga peregrina*, (Wils.,) Cab.—Tennessee Warbler. Spring and autumn visitant. Very rare.

[Our observations warrant the belief that all the *Helminthophagæ* are exceedingly rare. Though the four species given have been detected, the data with regard to their arrival and departure have not been ascertained.]

65. *Seiurus aurocapillus*, (Linn.,) Sw.—Golden-crowned Wagtail. Exceedingly abundant summer resident. Arrives April 12; for about two weeks keeps perfectly silent, hiding in the thickets and

It has been detected as far north as Maine. (See Proc. Brep
soc for 1863 & paper by Mr. Verrill.)

G. philadelphia was detected by Mr. L. E. Chittenden,
in the fall of 1861. in some shrubbery on 14th street
near Q street.



laurel brakes, (*Kalmia latifolia*,) so that its loud, harsh notes are not heard until the first of May, when they fill the woods, greatly to the annoyance of the collector searching for rarer and more retiring species. Found in high woods, especially where there is an undergrowth. Is *not* aquatic in any sense, but keeps on the ground rustling among the dry leaves for insects, and when disturbed flies to the nearest tree.

66. *Seiurus noveboracensis*, (Gm.,) Nutt.—Water Wagtail. Quite common in spring and fall; also breeds sparingly, having been found in July. Arrives in spring about May 1. Is eminently aquatic; swampy thickets, thick gloomy woods interspersed with puddles, where it associates with *Rhyacophilus solitarius*, are favorite resorts.

67. *Seiurus ludovicianus*, (Vieill.,) Bon.—Large-billed Water Wagtail. This bird, generally considered so rare, we have found to be not at all uncommon at certain seasons in particular localities. From the 20th of April to the 10th of May it may always be obtained, by an acute collector, in the dense laurel brakes which border the banks of and fill the ravines leading into Rock creek and Piney branch. We think we have seen it in June, which would prove it to breed here, as is, indeed, very probable. We have not detected it in the fall. It is usually very shy, darting at once into the most impenetrable brakes; but we have sometimes seen it quite the reverse, and have shot a pair, one after the other, as they sat in full view before me unconcernedly wagging their tails. We have nearly always found it in *pairs*, even as early as April 20. Its note is a sparrow-like chirp, like that made by striking two pebbles together; but it has also a loud and most beautiful and melodious song, the singularity of which first drew our attention to it.

68. *Dendroica virens*, (Gm.,) Bd.—Black-throated Green Wood-warbler. Spring and autumn visitant. None breed. In spring, from May 1 to 20; in fall, from September 7 to October 1. High open woods. Abundant.

69. *Dendroica canadensis*, (Linn.,) Bd.—Black-throated Blue Wood-warbler. Like the preceding, but rather less numerous.

70. *Dendroica coronata*, (Linn.,) Gray.—Yellow-rumped Wood-warbler. Winter resident. Exceedingly abundant. Arrive second week in October and remain until second week in May. Moults during the whole month of April, but before they leave are in full spring dress, though they have no song here. Most abundant in April and October, less so in depth of winter. Fond of hedges, orchards, copses, &c., but found everywhere. (*Albino* obtained.)

71. *Dendroica blackburniae*, (Gm.,) Bd.—Blackburnian Wood-warbler. Spring and autumn visitant. None breed. In spring, from May 1 to 20; in fall, from September 1 to 25. High open woods. Common.

72. *Dendroica castanea*, (Wils.,) Bd.—Bay-breasted Wood-warbler. Spring and autumn visitant. None breed. May 1 to 20; September 1 to 30. More abundant in fall than in spring. High open woods; sometimes laurel brakes, &c.

73. *Dendroica pinus*, (Wils.,) Bd.—Pine-creeping Wood-warbler. Summer resident. Arrives early in March, and stays until October.

Not very abundant at any time, and breeds but sparingly. High open woods. Pine and spruce forests.

74. *Dendroica pennsylvanica*, (Linn.,) Bd.—Chestnut-sided Wood-warbler. Spring and autumn visitant. None breed. In spring, from May 1 to 25; in fall, from September 1 to 20. High open woods. Abundant.

75. *Dendroica striata*, (Forst.,) Bd.—Black-poll Wood-warbler. Spring and autumn visitant. None breed. In spring, from May 7 to June 1; in fall, September 7 to second week in October. Arrive latest in both spring and fall, and stay latest of all the migratory warblers. Are the most numerous at both seasons, but especially abundant in the fall. High open woods.

76. *Dendroica aestiva*, (Gm.,) Bd.—Summer Yellow Wood-warbler. Summer resident. Very abundant. Breeds in numbers throughout the city, placing the nest in the forks of garden and fruit trees. Arrives April 25; leaves early in September. Never found in high open woods with the other *Dendroicæ*, but frequents orchards, gardens, &c.; also swampy copses.

77. *Dendroica maculosa*, (Gm.,) Bd.—Black and Yellow Wood-warbler. Spring and autumn visitant. None breed. Arrives first week in May; remains till the third. In fall, from September 1 to October 7. High open woods. Abundant.

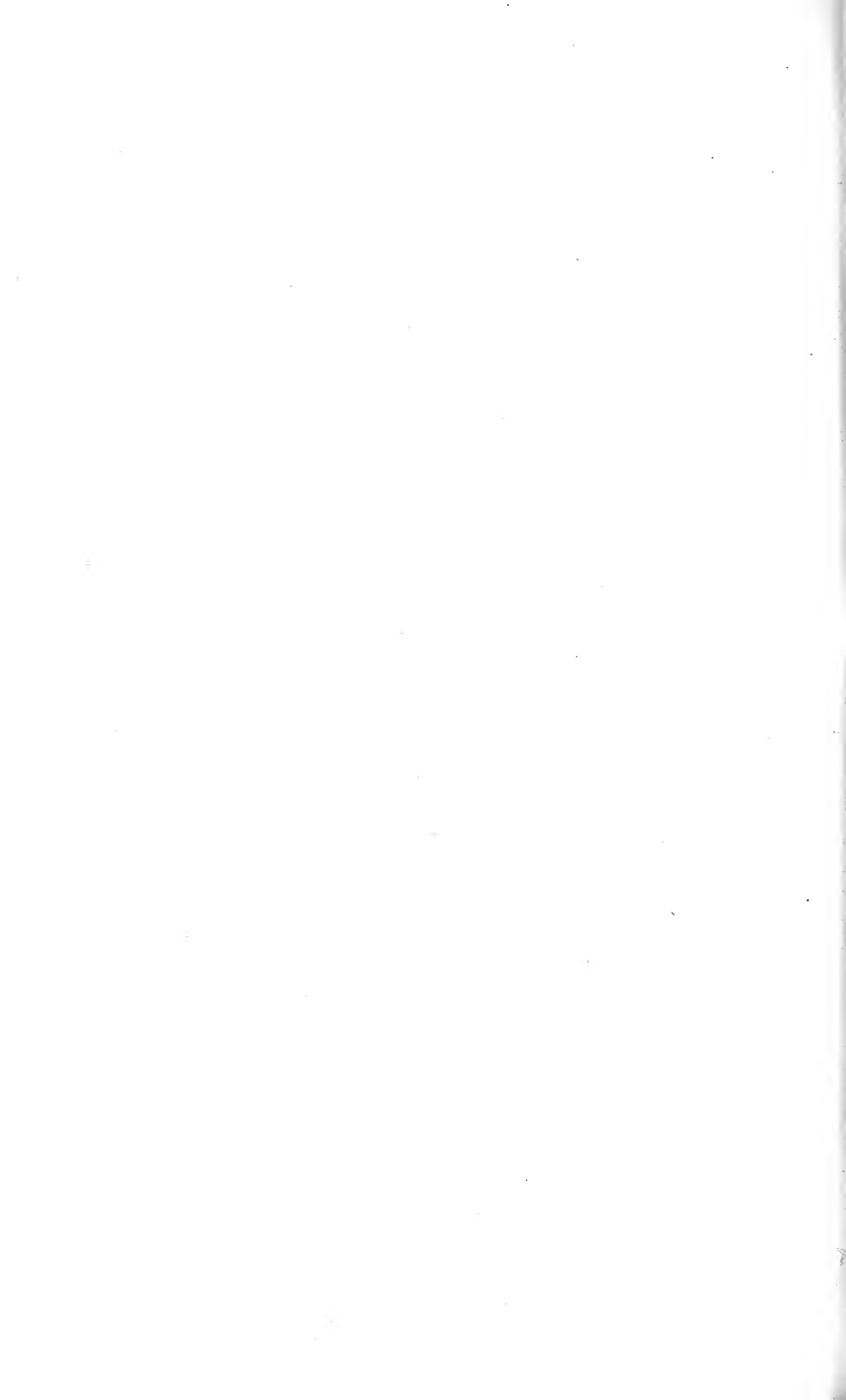
78. *Dendroica tigrina*, (Gm.,) Bd.—Cape May Wood-warbler. Exceedingly rare. A single specimen obtained September 12, 1859. Times of arrival and departure probably identical with those of *D. virens*, *canadensis*, &c.

79. *Dendroica superciliosa*, (Bodd.,) Bd.—Yellow-throated Wood-warbler. Entirely accidental visitor. One specimen obtained in 1842, and now in Smithsonian collection.

80. *Dendroica discolor*, (Vieill.,) Bd.—Prairie Wood-warbler. Mostly spring and autumn visitant, being quite abundant during those seasons. A few, however, breed. Arrives earlier than most of the *Dendroicæ*, about April 20. Frequents almost exclusively cedar patches and pine trees, and has very peculiar manners and notes.

81. *Dendroica palmarum*, (Gm.,) Baird.—Yellow Red-poll Wood-warbler. Spring and autumn visitant. Rather rare. None breed. Arrives about May 1; in fall, late in September, and does not leave till middle of October, after all the other warblers but *Dend. coronata* have taken their departure. Frequents old corn and buckwheat fields, associating with various species of sparrows; differing in this respect from all others of its genus, and resembling *Oporornis agilis*.

[There are twenty-two species of *Dendroica* found in North America; of these, fourteen have been observed here. Not one is a permanent resident; three only (*D. pinus*, *aestiva*, *discolor*) breed; one (*D. coronata*) is a winter resident. Nine others are spring and fall visitants; of these, seven (*D. virens*, *canadensis*, *blackburniae*, *castanea*, *pennsylvanica*, *striata*, *maculosa*) do not differ materially in numbers, habits, or times of arrival and departure; one (*D. palmarum*) differs in times of arrival and departure, and very remarkably in habits; one (*D. superciliosa*) is an accidental visitor; one (*D. tigrina*) is exceed-



ingly rare. In addition, *Dendroica cærulea* is undoubtedly to be found here.]

82. *Myiodiotes mitratus*, (Gm.,) Aud.—Hooded Warbler. Rare spring and autumn visitant. Perhaps some breed.

83. *Myiodiotes pusillus*, (Wils.,) Bon.—Green Black-capped Flycatcher. Rare spring and autumn visitant. A few may breed.

84. *Myiodiotes canadensis*, (Linn.,) Aud.—Canada Flycatcher. Spring and autumn visitant. Abundant. Frequents high, open woods, keeping mostly in the lower branches of the trees, and also the more open undergrowth of marshy places. Arrives the last week in April, and remains about two weeks; arrives in fall the first week in September, and stays until the fourth.

85. *Setophaga ruticilla*, (Linn.,) Sw.—Redstart. Chiefly spring and autumn visitant. But very few breed. Exceedingly abundant in spring from April 25 to May 20, and in fall from September 1 to 20; in all woody or swampy situations. Has a habit of running along little twigs sideways. Note very similar to that of *Dendroica cæstiva*.

86. *Pyrranga rubra*, (Linn.,) Vieill.—Scarlet Tanager. Spring and autumn visitant. A few breed. In spring, from first to last week in May; in fall, from September 1 to 20. Common, but only found in high, open woods.

87. *Pyrranga cæstiva*, (Linn.,) Vieill.—Summer Red Bird. Summer resident. Not abundant. Arrives May 1; leaves towards the latter part of September. Frequents entirely high woods, especially those that have much undergrowth.

88. *Hirundo horreorum*, Barton.—Barn Swallow. Exceedingly abundant summer resident. Arrives March 25, and remains until September 12. Breeds in barns, out-houses, &c.

89. *Hirundo lunifrons*, Say.—Cliff Swallow. Summer resident, but not so abundant as preceding, from scarcity of good breeding places. Arrives last week in April, and remains until September 12.

90. *Hirundo bicolor*, Vieill.—White-bellied Swallow. Summer resident. Common, but not nearly so much so as *H. horreorum*. Arrives first week in April, and remains until third week in September.

91. *Cotyle (Cotyle) riparia*, (Linn.,) Boie.—Bank Swallow. Summer resident; the most abundant of the swallows; more so in fall than in spring. Arrives second week in May; departs about the middle of September. Eminently gregarious at all seasons. (*Albino* obtained.)

92. *Cotyle (Stelgidopteryx) serripennis*, (Aud.,) Bon.—Rough-winged Swallow. Summer resident. Rather rare. Arrives third week in April; leaves about the middle of September.

93. *Progne purpurea*, (Linn.,) Boie.—Purple Martin. Summer resident. Common. Arrives May 1; leaves first week in September. Many breed in the city and about the public buildings.

94. *Ampelis cedrorum*, (Vieill.,) Bd.—Cedar Waxwing. "Cedar Lark." Resident all the year. Abundant, particularly in the fall. Gregarious; almost always seen in flocks. Breeds latest of the summer residents, being in flocks as late as first week in June.

95. *Collyrio borealis*, (Bon.,) Bd.—Great Northern Shrike. Very

rare. Perhaps its southern limit. Seen only in severe winter weather.

96. *Vireo (Vireosylva) olivaceus*, (Linn.) Vieill.—Red-eyed Vireo. Summer resident. Found in all the high, open woods, from April 20 to September 25. The most abundant summer resident.

97. *Vireo gilvus*, (Vieill.) Bon.—Warbling Vireo. Summer resident. Common. Arrives April 20, and remains until September 20. Frequents orchards, gardens, &c.; also, sometimes, low, thick swamps, and is especially abundant in the city, breeding in the high sycamore and poplar trees. Very seldom seen in woods with other vireos.

98. *Vireo (Lanivireo) solitarius*, (Wils.) Vieill.—Blue-headed Vireo. Spring and autumn visitant. (Some breed?) Arrives in spring April 25; leaves in fall October 20. Rarest of the vireos. Inhabits high, open woods, associating with *V. olivaceus* and *V. flavifrons*.

99. *Vireo (Lanivireo) flavifrons*, Vieill.—Yellow-throated Vireo. Summer resident. Abundant. Arrives April 25; remains until September 25. High, open woods. [*Vireo philadelphicus*, Cass., has never been actually detected, but is undoubtedly a very rare inhabitant of the District.]

100. *Mimus polyglottus*, (Linn.) Boie.—Mocking Bird. Summer resident; but rare. Arrives April 25; departs about the middle of September.

101. *Mimus carolinensis*, (Linn.) Gray.—Cat Bird. Summer resident. Exceedingly abundant. Found in all briar patches, along fences, and in thickets. Arrives in spring, the 3d week in April. Seems rather careless in concealing its nest, but very solicitous in protecting it. Departs about October 15.

102. *Harporhynchus rufus*, (Linn.) Cab.—Thrasher. "French Mocking Bird;" "Sandy Mocking Bird." Summer resident. Abundant. Arrives April 20, departs first week in October.

103. *Thriothorus ludovicianus*, (Linn.) Bon.—Great Carolina Wren. Permanent resident. Not abundant, but most so in the summer; breeds in thick shrubbery, &c., about gardens; at other seasons is very shy and unfamiliar.

104. *Cistothorus (Telmatochates) palustris*, (Wils.) Bd.—Long Billed Marsh Wren. Summer resident. Arrives 3d week in April, leaves early in October. Very abundant, but only in certain localities; chiefly in the tracts of *Zizania aquatica*, which border the Potomac and Anacostia rivers [*Cistothorus stellaris*, though we have not been able to detect it, is doubtless found sparingly here.]

105. *Troglodytes ædon*, Vieill.—House Wren. Summer resident. Very abundant. Arrives April 15, leaves October 20. Breeds in boxes, out-houses, sheds, &c., and in orchards.

106. *Anorthura hyemalis*, (Wils.)—Winter Wren. Winter resident; rather uncommon. Arrives 1st week in October; remains until latter part of April. Frequents thick briar patches in dark woods, and the rocks and gullies about ravines and the sides of creeks.

107. *Certhia americana*, Bon.—Brown Creeper. Resident all the year. High, open woods. Abundant.

V. novboracensis Omitted!
Common summer resident: Apr.
Oct.

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

108. *Sitta carolinensis*, Gm.—White-bellied Nuthatch. Resident all the year. Very abundant, especially in fall. High, open woods.

109. *Sitta canadensis*, Linn.—Red-bellied Nuthatch. Winter resident. Arrives early in October, and remains until May. Rather rare. High, open woods, pine forests.

110. *Polioptila caerulea*, (Linn.,) Sclat.—Blue-Gray Gnatcatcher. Summer resident. Arrives early, the first week in April; remains until latter part of September. Very abundant. Breeds in high, open woods; on its first arrival frequents tall trees on the sides of streams, orchards, &c.

111. *Lophophanes bicolor*, (Linn.,) Bon.—Permanent resident, but the greater number breed further north. Exceedingly abundant, especially in fall. Found in all situations.

112. *Parus atricapillus*, Linn.—Black-capped Chick-a-dee. Winter resident.

113. *Parus carolinensis*, Aud.—Carolina Chick-a-dee. Summer resident. (Owing to the close resemblance of these two species, we have not been able to detect their times of arrival and departure.)

114. *Eremophila cornuta*, (Wils.,) Boie.—Sky-lark. Winter resident. Arrives November 1; remains until April. Abundant. Inhabits, *exclusively*, bare level meadows and open commons. Eminently gregarious while here.

115. *Pinicola canadensis*, (Briss.,) Cab.—Pine Grosbeak. An exceedingly rare and probably only accidental visitant in severe winters.

116. *Carpodacus purpureus*, (Gm.,) Gray.—Purple Finch. Winter resident; very abundant; eminently gregarious. Arrives early in October, and remains until May. Stragglers are seen through the greater part of that month, but the majority depart as soon as the leaves are fully expanded. High, open woods; feeding chiefly (entirely in spring) on tender young buds. Are in full song before they take their departure.

117. *Chrysomitris tristis*, (Linn.,) Bon.—Gold Finch. "Briar Bird." Permanent resident. Exceedingly abundant. Breeds in numbers throughout the city, building in the crotches of poplars and maples. In winter gregarious, collecting in very large flocks about the 15th of September, and continuing so until May. Is in dull plumage as long as it remains in flocks.

118. *Chrysomitris pinus*, (Wils.,) Bon.—Pine Finch. Winter resident; rather uncommon; always found in flocks, frequently associating with *C. tristis*. Remains until May.

119. *Ægiothus linaria*, (Lin.,) Cab.—Common Red-poll Linnet. Rare, perhaps only accidental visitant in severe winters, when it appears in restless flocks of greater or less extent.

[The two species of Cross-bills—*Curvirostra americana* and *leucoptera*—undoubtedly sometimes make their appearance in severe winters, though we have not been able to ascertain the fact with certainty.]

120. *Plectrophanes nivalis*, Meyer.—Snow Bunting. Rare visitant in the depth of winter.

[*P. lapponicus* may very possibly visit us occasionally.]

121. *Passerculus savanna*, (Wils.,) Bon.—Savanna Sparrow. Chiefly spring and autumn visitant; a few doubtless winter in secluded situations; none breed. Very numerous on low, moist meadows and watery savannas from March 15 to first week in May, and from October 10 to November 10. Shy and retiring; associate in companies; keep always on the ground. Are in full song before they depart.

122. *Pooecetes gramineus*, (Gm.,) Bd.—Bay-winged Bunting. Grass Finch. Resident all the year; very numerous in spring and autumn, less so in summer and winter. Frequent high dry fields, road sides, &c.

123. *Coturniculus passerinus*, (Wils.,) Bon.—Yellow-winged Sparrow. Summer resident; abundant. Arrives April 25; remains until October 15. Inhabits exclusively meadows and fields, keeping closely concealed in the grass. Usually solitary.

124. *Coturniculus henslowi*, (Aud.,) Bon.—Henslow's Bunting. Summer resident; exceedingly rare. (But one specimen known to have been obtained.)

125. *Zonotrichia leucophrys*, (Forst.,) Sw.—White-crowned Sparrow. Winter resident. Usually rare, but more plenty at irregular intervals; (e. g., in spring of 1861.) Remains until second week in May.)

126. *Zonotrichia albicollis*, (Gm.,) Bon.—White-throated Sparrow. Chiefly spring and autumn visitants, but numbers spend the winter in sheltered localities. Arrives early in October, and is exceedingly abundant during that month; becomes very numerous again the 1st of April and continues so until May 12. Mostly gregarious; frequent chiefly briar patches, hedges, roadsides, &c., in fall and winter, but in spring found on the ground in open woods. Sings both in fall and spring.

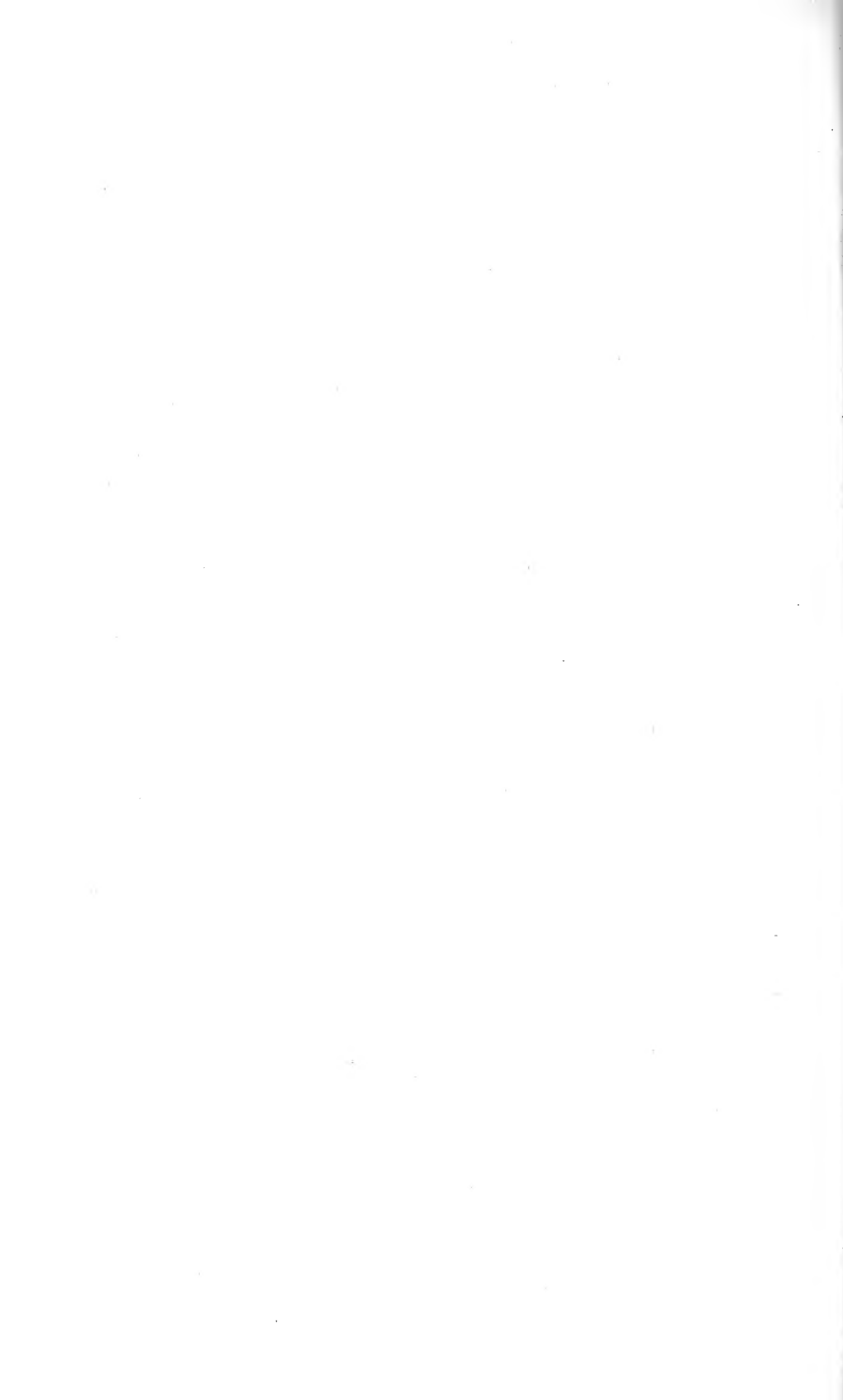
127. *Junco hyemalis*, (Linn.,) Scat.—Snow Bird. Winter resident. Arrive in fall, October 10 or 12; soon become very numerous, and continue so until 15th of April. Stragglers seen till May. Found everywhere; in pleasant weather keep close in thickets, ravines, &c.; but in severe weather approach farm-houses and scatter through the city. Gregarious; in full song before they leave.

128. *Spizella monticola*, (Gm.,) Bd.—Tree Sparrow. The most abundant winter sparrow except *Melospiza melodia*. Arrives 1st of November and leaves 1st of April; shy and retiring; chiefly gregarious. Found in thickets, briar patches, &c. Sings all through the winter.

129. *Spizella socialis*, (Wils.,) Bon.—Chipping Sparrow. Summer resident. Semi-domesticated, like *Troglodytes aedon*; breeds in orchards, gardens, shrubbery, about porches, &c. Especially fond of building the nest in small cedar bushes. March 10 to October 10.

130. *Spizella pusilla*, (Wils.,) Bon.—Field Sparrow. Resident all the year; especially abundant in spring; less so in summer and autumn; only found in secluded situations in winter. In full song in spring and occasionally sings in fall. Gregarious, except during the breeding season. Breeds in small, isolated bushes in fields, near the ground. (Albino obtained.)

131. *Melospiza melodia*, (Wils.,) Bd.—Song Sparrow. Permanent



resident. Excessively abundant, especially in winter, when it associates in large companies in briar patches and along tangled borders of streams.

132. *Melospiza palustris*, (Wils.,) Bd.—Swamp Sparrow.—Chiefly spring and autumn visitant; arrive in spring last week in April; become abundant in the fall, second week in October; very secluded and retiring in habits. Gregarious in fall.

[*Melospiza lincolni* is, in all probability, an inhabitant of the District, though we have never succeeded in detecting it.]

133. *Passerella iliaca*, (Merrem,) Sw.—Fox-colored Sparrow. Chiefly spring and autumn visitant, though some spend the winter in sheltered situations. Abundant from November 1 to 30, and from March 1 to 30. Eminently gregarious; inhabits thickets and the densest briar patches and laurel brakes. Sing just before departing; none breed.

134. *Euspiza americana*, (Gm.,) Bon.—Black-throated Bunting. Summer resident. Arrives May 1; leaves towards the end of September. Inhabits open fields and meadows. Abundant, especially in the spring.

135. *Guiraca ludoviciana*, (Linn.,) Sw.—Rose-breasted Grosbeak. Rare. Summer visitant; seen only at intervals. Found in high, open woods; generally in small companies. Shy and difficult to procure.

136. *Guiraca caerulea*, (Linn.,) Sw.—Blue Grosbeak. Summer resident. Rather rare. Breeds in much the same places as does *Cardinalis virginianus*; at other times found in more open situations, orchards, sparse woods, &c. Arrives first week in May; departs about middle of September.

137. *Cyanospiza cyanea*, (Linn.,) Bd.—Indigo Bird. “Little Blue Bird.” Summer resident. Common. Arrives 1st of May; remains until second week in September. About orchards, edges of woods, meadows, &c.

138. *Cardinalis virginianus*, Bon.—Cardinal Grosbeak. “Red Bird.” Resident all the year. Abundant, but always shy and difficult to procure. Frequents only the thickest briar patches. Moults from middle of July till October.

139. *Pipilo erythrophthalmus*, (Linn.,) Vieill.—Towhe Bunting. “Marsh Robin.” Chiefly spring and autumn visitant; a few breed. Very abundant from April 25 to May 10, and from first to third week in October. Thickets, laurel brakes, &c.; partially gregarious.

140. *Dolichonyx oryzivorus*, (Linn.,) Sw.—Bob-o'-link. “Reed Bird.” Spring and autumn visitant. In spring distributed abundantly about orchards and meadows, even at that season generally in flocks, from May 1 to 15; in autumn frequent in immense flocks the tracts of *Zizania aquatica*, along the river; also cornfields, &c., from August 20 to October.

141. *Molothrus pecoris*, (Gm.,) Sw.—Cowpen Bird. “Cow Bird.” Summer resident. Not very common. Arrives second week in March; remains till October.

142. *Agelaius phoeniceus*, (Linn.,) Vieill.—Red-winged Black Bird. Resident nearly all the year; more abundant in spring and fall, especially the latter. Breed. Commence to flock over the tracts of

Zizania aquatica and the neighboring cornfields the first week in August. Arrive in small flocks early in March.

143. *Sturnella magna*, (Linn.,) Sw.—Meadow Lark. Field Lark. Resident all the year. Abundant. Collect in flocks, sometimes of great extent, and then are very shy. Old fields, meadows, &c.

144. *Icterus baltimore*, (Linn.,) Daudin.—Baltimore Oriole. Chiefly spring and autumn visitant, though many breed. Arrives the first week in May, and remains until latter part of September. Orchards; high, open woods.

145. *Icterus spurius*, (Linn.,) Bon.—Orchard Oriole. Summer resident. Not uncommon. Arrives first week in May; remains till latter part of September. Orchards, meadows, and high, open woods.

146. *Scolecophagus ferrugineus*, (Gm.,) Sw.—Rusty Grackle. "Black Bird." Winter resident. Abundant. Strictly gregarious. Arrives third week in October; remains until April. Swampy localities; also ploughed fields, &c.

147. *Quiscalus versicolor*, (Linn.,) Vieill.—Purple Grackle. "Crow Black Bird." Summer resident. Abundant, but more particularly so in spring and fall. Arrives about March 15; departs late in October.

148. *Corvus americanus*, Aud.—Common Crow. Resident all the year. Very abundant. Found everywhere. Gregarious in winter. Less abundant during the breeding season.

149. *Corvus ossifragus*, Wils.—Fish Crow. Resident all the year. Abundant. Less wary and suspicious than the preceding, and more confined to the borders of the rivers. Confounded with the preceding generally.

150. *Cyanura cristata*, (Linn.,) Sw.—Blue Jay. "Jay Bird." Resident all the year. Abundant, especially in fall and winter, when it is partially gregarious. Found everywhere.

151. *Ectopistes migratoria*, (Linn.,) Sw.—Wild Pigeon. Make their appearance in flocks at irregular intervals throughout the fall, winter, and early spring months.

152. *Zenaidura carolinensis*, (Linn.,) Bon.—Carolina Turtle Dove. "Dove." Permanent resident. Not very abundant. Sometimes collect in large flocks in the fall, when they frequent cornfields, &c.

153. *Chamcepelina passerina*, (Linn.,) Sw.—Ground Dove. An entirely accidental visitor from the south.—(One specimen obtained, now in museum S. I.)

154. *Meleagris gallopavo*, Linn.—Wild Turkey. Regularly seen in the markets all through the winter, though not often found in the immediate vicinity of the city. Remains all the year in the neighboring districts.

155. *Bonasa umbellus*, (Linn.,) Stephens. Ruffed Grouse. "Pheasant." Resident all the year. Apparently not uncommon, but frequent mostly impenetrable laurel brakes, &c., and are difficult to procure.

156. *Ortyx virginianus*, (Linn.,) Bon.—American Partridge. "Partridge." Resident all the year. Still abundant in the immediate vicinity of the city during the late fall and winter months.

Specimen of Aegialitis semipalmatus obtained in market.

in the marshes near Newbern, N.C.

157. *Grus canadensis*, (Linn.,) Temm.—Sand-hill Crane. Exceedingly rare; perhaps only accidental. (Specimen obtained.)

158. *Garzetta candidissima*, (Jacq.,) Bon.—Snowy Heron. Not uncommon about the marshes of the Potomac in early fall.

159. *Herodias egretta*, (Gm.,) Gray.—White Egret. Occasionally seen along the river in the late summer and early fall months.

160. *Ardea herodias*, Linn.—Great Blue Heron. "Blue Crane." Found at intervals during the summer and early autumn along the marshes bordering the river.

161. *Florida cerulea*, (Linn.,) Bd.—Little Blue Heron. Rare, perhaps only accidental, towards the end of summer. (Specimen obtained.)

162. *Ardetta exilis*, (Gm.,) Gray.—Least Bittern. Summer resident; rather uncommon. Arrives early in May; departs late in September. Found chiefly in the *Zizania aquatica* marshes.

163. *Botaurus lentiginosus*, Steph.—Bittern. "Indian Hen." "Sage Hen." Resident all the year. Common. Only heron that winters here.

164. *Butorides virescens*, (Linn.,) Bon.—Green Heron. "Fly-up-the-creek." Summer resident. Most abundant of the herons. Arrives 1st of May; remains until middle of September. Numerous about Rock creek and the marshes and creeks of the Potomac.

165. *Nyctiardea gardeni*, (Gm.,) Bd.—Night Heron. Rare; seen occasionally during the latter part of summer.

166. *Charadrius virginicus*, Bork.—Golden Plover. "Bull-head Plover." Spring and autumn visitant. Passes quickly through in early spring; is more numerous in autumn, during latter part of October and whole of November, about fields, ploughed land, &c.

167. *Ægialitis (Oxyechus) vociferus*, (Linn.,) Cass.—Killdeer Plover. "Killdee." Resident all the year, or nearly so. Most numerous early in spring and late in autumn; generally seen in flocks, on meadows, commons, ploughed lands, &c.

[*Ægialitis semipalmatus* is undoubtedly an inhabitant of the District.]

168. *Philohela minor*, (Gm.,) Gray.—Woodcock. Resident all the year. Common. Frequent chiefly "Woodcock brakes" and moist cornfields; and in early spring low woods and thickets.

169. *Gallinago wilsonii*, (Temm.,) Bon.—Wilson's Snipe. "English" or "Jack" Snipe. Spring and autumn visitants. Abundant. Pass through early in the spring and return in the fall the first week in September, and remain about two weeks. In flocks in the fall.

[*Macrorhamphus griseus*, though we have not detected it, is doubtless an inhabitant of the District.]

[*Micropalama himantopus* may very possibly be hereafter detected.]

170. *Actodromas maculata*, (Vieill.,) Cass.—Pectoral Sandpiper. "Grass Snipe." Spring and autumn visitant. Rarely seen in spring. Not uncommon in autumn from September 25 to November. Low, moist, grassy meadows, boggy commons, &c. Seen singly as often as in flocks.

171. *Actodromas minutilla*, (Vieill.,) Coues.—Least Sandpiper.

Spring and autumn visitant. In spring from May 1 to 15; in fall from August 25 to October. In habits very similar to preceding.

172. *Ereunetes pusillus*, (Linn.,) Cass.—Semipalmated Sandpiper. Rare; perhaps accidental; occasionally met with in spring and fall along the banks of the river. [Possibly a second species, (*Ereunetes minor*, Gundl.)]

173. *Symphemia semipalmata*, (Gm.,) Hartl.—Willet. Rare; spring and autumn visitant.

174. *Gambetta melanoleuca*, (Gm.,) Bon.—Greater Tell-tale Tatler. "Yellow-shanks Plover." Spring and autumn visitant. Common. In spring, from May 1 to 15; in autumn, middle of September to November. Generally seen singly or two or three together. Banks of the rivers, boggy meadows, commons intersected with pools, &c.

175. *Gambetta flavipes*, (Gm.,) Bon.—Lesser Tell-tale Tatler. "Yellow-shanks Plover." Identical in times of appearance and in habits with preceding.

176. *Rhyacophilus solitarius*, Wils.—Solitary Tatler. Spring and autumn visitant; very abundant, especially in spring. May 1 to 15, and August 25 to October 15. Very familiar and unsuspicious; decidedly gregarious, both in spring and fall. Frequents ditches and puddles, in low, boggy commons, &c.

177. *Tringoides macularius*, (Linn.,) Gray.—Spotted Sandpiper. "Sand Snipe." Summer resident; very abundant in spring. The only sandpiper that breeds. Arrives April 20 and remains through greater part of September. Found chiefly on Rock creek and banks of the river.

178. *Actiturus bartramius*, (Wils.,) Bon.—Bartram's Tatler. Grass Plover. Field Plover. Summer resident; rare. Found altogether on high, open fields and ploughed lands.

179. *Numenius longirostris*, Wils.—Long-billed Curlew. Not uncommon. Spring and autumn visitant; remaining a very short time at each season. In fall, about the middle of September. Found in places similar to those which the Yellow-legs frequent.

180. *Rallus elegans*, Aud.—Fresh-water Marsh-hen. "King Ortolan." Found sparingly in early autumn in the marshes along the rivers, with the *P. carolina*.

181. *Rallus virginianus*, (Linn.)—Virginia Rail. Spring and autumn visitant. Very rare in the spring, and not abundant in the fall. Arrives in fall the last week in August; departs about the same time with the *P. carolina*.

182. *Porzana carolina*, Vieill.—Common Rail. Sora. Ortolan. Spring and autumn visitant. Rare in spring, but very abundant in fall from the last week in August until the first frost. Found exclusively in the marshes bordering the Potomac and Eastern Branch.

[*Porzana noveboracensis*, though not detected, is undoubtedly an inhabitant of the District.]

183. *Porzana jamaicensis*.—Black Rail. Very rare, perhaps only accidental, during the early fall. (Specimen seen by ourselves September, 1861.)

184. *Fulica americana*, Gm.—Coot. "Crow Duck." Spring and

Probably more common than we supposed. Spec. procured
Sept. 13 1863.

184.^a A specimen of Gallinula galeata was
obtained in Malet, in winter of ~~1802~~ 03, early
in of 1803, by Mr. C. Drexler.

193.^a A specimen of Mareca penelope was obtained
in Malet, in winter of 1802-3 by C. Drexler. -

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autumn visitant; passing through early in the spring, and returning in the fall about the 1st of October. Very common in the fall.

185. *Cygnus americanus*, Sharpless.—American Swan. Winter resident. Not common. Seen sometimes on the river, and frequently exposed for sale in the market.

186. *Bernicla canadensis*, (Linn.,) Boie.—Canada Goose. Wild Goose. Winter resident. Common, but seen most frequently in the air, flying over. Arrive in fall just before the first approach of severe weather. Found in market through the winter.

187. *Anas boschas*, (Linn.)—Mallard. Very abundant winter resident. Found upon the Potomac and Anacostia rivers, and (more rarely) upon creeks and ponds.

188. *Anas obscura*, Gm.—Dusky Mallard. Black Mallard. Not rare. Habits same as those of preceding.

189. *Dafila acuta*, (Linn.,) Jenyns.—Pintail Duck. Sprig-tail. Winter resident. Common. Found mostly along the margins of the rivers, and sometimes inland. Arrive about the first of October.

190. *Nettion carolinensis*, (Gm.,) Baird.—Green-winged Teal. Winter resident. Abundant. Found chiefly along the marshes of the Potomac and Anacostia. Arrives sooner than most of the ducks, about the middle of September.

191. *Querquedula discors*, (Linn.,) Steph.—Blue-winged Teal. Winter resident. The most abundant of the ducks. Habits much as those of preceding.

192. *Chaulelasmus streperus*, (Linn.,) Gray.—Gadwall. Winter resident. Habits similar to those of the Mallard, with which it is often found associated, but it is less numerous.

193. *Mareca americana*, (Gm.,) Stephens.—Widgeon. Winter resident. Arrives in the fall about the first of October, and departs in spring during the month of April. Very abundant and not so difficult of approach as are most of the ducks.

194. *Aix sponsa*, (Linn.,) Boie.—Wood-duck. Summer Duck. Permanent resident; but more abundant in winter, being seldom seen in summer. Not very abundant at any time.

195. *Fulix marila*, (Linn.,) Bd.—Greater Black-head Duck. Winter resident. Not very abundant. Often exposed for sale in market, but not much esteemed for food.

196. *Fulix affinis*, (Forst.,) Bd.—Lesser Black-head Duck. Winter resident. Same as preceding.

197. *Fulix collaris*, (Donovan,) Baird.—Ring-neck Duck. Winter resident. Rare. Arrives in fall about the last week in September.

198. *Aythya americana*, (Eyton,) Bon.—Red-head duck. Winter resident. Very abundant. A common market duck, and frequently offered for sale as the canvas back. Found upon the "flats" of the rivers, and occasionally on inland marshes.

199. *Aythya vallisneria*, (Wils.,) Bon.—Canvas-back duck. Winter resident. At times exceedingly abundant. Highly prized by sportsmen and epicures. Habits much those of the preceding.

200. *Bucephala americana*, (Bon.,) Baird.—Golden-eye duck. Winter resident. Rather abundant. Frequently seen in the market.

201. *Bucephala albeola*, (Linn.,) Baird.—Buffel-headed duck; “Butter-ball.” Winter resident. More common than preceding. Arrive in fall, about the middle of September; leave in spring, the second week in April.

202. *Harelda glacialis*, (Linn.,) Leach.—Long-tailed duck.

203. *Melanetta velvetina*, (Cass.,) Baird.—Velvet duck.

204. *Pelionetta perspicillata*, (Linn.,) Kaup.—Surf duck.

205. *Oidemia americana*, Swainson.—Scoter duck.

(The four preceding birds do not properly belong to the fauna of the District, being strictly marine birds. They are found at the mouth of the Potomac, and ascend it as far as the salt water reaches. Their appearance in this immediate locality must, however, be considered accidental. They are all to be seen in the market during the winter.)

206. *Erismatura rubida*, (Wils.,) Bon.—Ruddy duck. Winter resident. Abundant. Frequently exposed for sale in the market, but not esteemed for food.

207. *Mergus americanus*, Cassin.—Goosander. “Fishing duck.” Winter resident. Not common. More frequently seen on creeks and millponds than on the rivers.

208. *Mergus serrator*, Linn.—Red-breasted merganser. “Fishing duck.” Winter resident. Rather more common than the preceding. Found in much the same situations.

209. *Lophodytes cucullatus*, (Linn.,) Reich.—Hooded merganser. Winter resident. Rather rare.

210. *Thalassidroma leachii*, Bon.—Leach’s Petrel. Accidental visitor. (Numbers were seen during a storm some years ago.)

211. *Puffinus*, —? A shearwater, probably *P. obscurus*, has been detected in the District.

212. *Larus smithsonianus*,* Coues.—Herring gull. “Sea gull.” Seen over the river through the winter. Not numerous. Exceedingly shy and wary.

213. *Larus delawarensis*, Ord.—Ring-billed gull. Seen about the river during the winter months. More numerous than the preceding.

214. *Chroicocephalus atricilla*, (Linn.,) Lawr.—Laughing gull. Occasionally seen during the late summer and early autumn months.

215. *Chroicocephalus philadelphia*, (Ord.,) Lawr.—Bonaparte’s hooded gull. More abundant than the preceding, being quite common. Remains here through the winter.(?)

216. *Sterna aranea*, Wils.—Marsh Tern. Rare; only occasionally seen during the late summer and early fall months, over the marshes bordering the river.

217. *Sterna wilsonii*, Bon.—Wilson’s Tern. An occasional visitor during the late summer and early fall months. [*Sterna forsteri* is undoubtedly to be found in the District.]

218. *Sterna frenata*, Gambel.—Least Tern. Not uncommon. Frequently seen over the marshes bordering the Potomac and Eastern Branch in August and September, and more rarely in spring.

219. *Hydrochelidon plumbea*, Wils.—Short-tailed Tern. “Little

* See Proc Acad. Nat. Sci., Philadelphia, June, 1862, p. 296.

210a Oceanites Wilsoni has been detected, turning
a storm some years ago; specimens in Mus.
Smithsonianum.

S. marinus may very probably be detected.

Gelochelidon anglica. (Mont.)

Sterna hirundo, Linn.

I detected a specimen of young Sterna forsteri in the
shape of the taxidermist Norris. It is now in Mus.
Smith. It is a bird of the year, obtained on the Potomac.

Sterna frenata = Sterna antillarum Lesson.

Hydrochelidon fisipes.



Sea Gull." Less numerous than preceding, but found in similar localities and at much the same times.

220. *Rhynchops nigra*, Linn.—Black Skimmer. A rare, perhaps accidental, visitor during the summer. (Specimens seen by ourselves September 8, 1858, on the Potomac river.)

221. *Graculus dilophus*, Gray.—Double-crested Cormorant. A specimen has been detected.

222. *Colymbus torquatus*, Brunn.—Great Northern Diver. "Loon." Occasionally seen during the winter.

223. *Podiceps (Pedetaithya) holbolli*, Reinhardt.—Red-necked Grebe. Not uncommon on the Potomac during the winter months.

224. *Podiceps cristatus*, Lath.—Crested Grebe. "Water Witch." Found on the Potomac during the winter months.

225. *Podiceps (Dytes) cornutus*, Lath.—Horned Grebe. Common on Potomac in winter.

226. *Podilymbus podiceps*, (Linn.) Lawr.—"Dipper." "Water Witch." Abundant on the Potomac in winter. (We have not been able to ascertain the precise times of arrival and departure of the five preceding birds.)

The birds included in the preceding catalogue are now presented in sections to show at a glance those which are permanent, or summer, or winter residents, and those which are regular or accidental visitants. It is somewhat difficult to make out such an analytical table, from the fact that of some species undoubtedly to be classed as spring and autumn visitants a few individuals breed or pass the winter in secluded situations, and *vice versa* of those which regularly pass the summer or winter with us, many are more abundant in the spring and fall. We have endeavored to place each species in the class under which it most naturally falls, indicating irregularities of this sort in foot notes.

A.

PERMANENT RESIDENTS.

| | | |
|--------------------------|---------------------------|-------------------------|
| Cathartes aura. | Picus pubescens. | Cardinalis virginianus. |
| Falco sparverius. | Sphyrapicus varius. | Agelaius phoeniceus. |
| Accipiter cooperi. | Hyalomus pileatus. | Sturnella magna. |
| Accipiter fuscus. | Centurus carolinus. | Corvus americanus. |
| Buteo borealis. | Colaptes auratus. | Corvus ossifragus. |
| Buteo lineatus. | Turdus migratorius. | Cyanura cristata. |
| Buteo pennsylvanicus. | Sialia sialis. | Zenaidura carolinensis. |
| Circus hudsonius. | Ampelis cedrorum. | Bonasa umbellus. |
| Haliaetus leucocephalus. | Thriothorus ludovicianus. | Meleagris gallopavo. |
| Scops asio. | Certhia americana. | Ortyx virginianus. |
| Bubo virginianus. | Sitta carolinensis. | Botaurus lentiginosus. |
| Otus wilsonianus. | Lophophanes bicolor. | Ægialitis vociferus. |
| Brachyotus cassini. | Chrysomitris tristis. | Philohela minor. |
| Syrnium nebulosum. | Spizella pusilla. | Aix sponsa. |
| Picus villosus. | Melospiza melodia. | |

B.

WINTER RESIDENTS.

| | | |
|--------------------|------------------------|----------------------|
| Falco columbarius. | Ectopistes migratoria. | Erismatura rubida. |
| Aquila canadensis. | Chauleasmus streperus. | Bucephala americana. |

Anthus ludovicianus.
Regulus satrapa.
Dendroica coronata.
Collyrio borealis.
Anorthura hyemalis.
Sitta canadensis.
Parus atricapillus.
Eremophila cornuta.
Carpodacus purpureus.
Chrysomitris pinus.
Zonotrichia leucophrys.
Junco hyemalis.
Spizella monticola.
Scolecophagus ferrugineus.

Mareca americana.
Fulix marila.
Fulix affinis.
Fulix collaris.
Aythya americana.
Aythya vallisneria.
Cygnus americanus.
Bernicla canadensis.
Anas boschas.
Anas obscura.
Dafila acuta.
Nettion carolinensis.
Querquedula discors.

Bucephala albeola.
Mergus americanus.
Mergus serrator.
Lophodytes cucullatus.
Larus smithsonianus.
Larus delawarensis.
Chroicocephalus philadelphia.
Podiceps holböllii.
Podiceps cristatus.
Podiceps cornutus.
Podilymbus podiceps.

C.

SUMMER RESIDENTS.

Pandion carolinensis.
Coccyzus americanus.
Coccyzus erythrophthalmus.
Melanerpes erythrocephalus.
Trochilus colubris.
Chætura pelagica.
Antrostomus vociferus.
Ceryle alcyon.
*Tyrannus carolinensis.**
Myiarchus crinitus.
*Sayornis fuscus.**
Contopus virens.
Empidonax acadicus.
Turdus mustelinus.
*Mniotilta varia.**
Geothlypis trichas.
Icteria viridis.
Seiurus aurocapillus.
Seiurus noveboracensis.

Helmitherus vermivorus.
Dendroica aestiva.
Dendroica pinus.
Dendroica discolor.
Pyranga æstiva.
Hirundo horreorum.
*Hirundo lunifrons.**
*Hirundo bicolor.**
Cotyle riparia.
Cotyle serripennis.
Progne purpurea.
Vireo olivaceus.
Seiurus ludovicianus.
Vireo flavifrons.
Vireo gilvus.
Mimus polyglottus.
Mimus carolinensis.
Harporhynchus rufus.
Troglodytes ædon.
Cistothorus palustris.

Polioptila cærulea.
Parus carolinensis.
Poocetes gramineus.
Coturniculus passerinus.
Coturniculus henslowi.
Spizella socialis.
Euspiza americana.
Guiraca ludoviciana.
Guiraca cærulea.
Cyanospiza cyanea.
Molothrus pecoris.
*Icterus baltimore.**
Icterus spurius.
Ardea herodias.
Garzetta candissima.
Herodias egretta.
Butorides virescens.
*Nyctiardea gardeni.**
*Tringoides macularius.**
Actiturus bartramius.

* The greater number go further north.

D.

SPRING AND AUTUMN VISITANTS—MIGRATORY SPECIES.

Chordeiles popetue.
*Empidonax traillii.**
*Empidonax flaviventris.**
Empidonax minimus.
Turdus pallasi.
Turdus fuscescens.
Turdus swainsonii.
Turdus aliciae.
Regulus calendula.†

Dendroica virens.
Dendroica canadensis.
Dendroica blackburniæ.
Dendroica castanea.
Dendroica pennsylvanica.
Dendroica striata.
Dendroica maculosa.
Dendroica tigrina.
Dendroica palmarum.

*Pipilo erythrophthalmus.**
Dolichonyx oryzivorus.
*Quiscalus versicolor.**
*Ardetta exilis.**
Charadrius virginicus.
Gallinago wilsonii.
Actodromas maculata.
Actodromas minutilla.
Symphemia semipalmata.

Jouey's list adds 15 species, 5
of which are among C. + P's probabilities,
and the following 9 are entirely new
Parus domesticus - [introduced]
Quiscalus aculeus [doubtful species]
Tyrannus ~~caeruleus~~ [shot in many lands]
Sitta flammula
Gallinula falcata [from C. + P's Niss.]
Spatula clypeata
Marca penelope [from C. + P's Niss.]
Branta bernicla
Oenanthe oceanica [from C. + P's Niss.]
Vireo noveboracensis ~~5~~

E.

Exocoetis *Exocoetis* *pusillus* *nae* perhaps better as *Exocoetis* *nae*
to Section "20."

Exocoetis *pusillus* *nae* *deductus*; *pusillus* *nae* *deductus*.

Oligocheilus *semipalmatus*.

Theraps *pusillus*.

Tallinnula *galeata*.

F.

Canrostra *americana*
lanceolata

Aequipecten *semipalmatus*

Stroma *fourieri*

Exocoetis *pusillus*

} have been since detected,
and are in Joubert's list

| | | |
|------------------------------------|---------------------------------|---------------------------------|
| <i>Parula americana.</i> | <i>Myiodioctes mitratus.*</i> | <i>Gambetta melanoleuca.</i> |
| <i>Oporornis agilis.*</i> | <i>Myiodioctes pusillus.*</i> | <i>Gambetta flavipes.</i> |
| <i>Oporornis formosus.*</i> | <i>Myiodioctes canadensis.</i> | <i>Rhyacophilus solitarius.</i> |
| <i>Helminthophaga pinus.</i> | <i>Setophaga ruticilla.*</i> | <i>Numenius longirostris.</i> |
| <i>Helminthophaga chrysopetra.</i> | <i>Pyrranga rubra.*</i> | <i>Rallus elegans.</i> |
| <i>Helminthophaga ruficapilla.</i> | <i>Vireo solitarius.*</i> | <i>Rallus virginianus.</i> |
| <i>Helminthophaga peregrina.</i> | <i>Passerculus savanna.</i> | <i>Porzana carolina.</i> |
| | <i>Melospiza palustris.</i> | <i>Fulica americana.</i> |
| | <i>Passerella iliaca.†</i> | <i>Sterna frenata.</i> |
| | <i>Zonotrichia albicollis.†</i> | <i>Hydrochelidon plumbea.</i> |

* A few may, in some cases certainly do, breed here.

† A few probably remain through the winter.

E.

ACCIDENTAL OR VERY RARE VISITORS.

| | | |
|--------------------------------|----------------------------------|------------------------------------|
| <i>Astur atricapillus.*</i> | <i>Porzana jamaicensis.</i> | <i>Thalassidroma Leachii.</i> |
| <i>Nyctea nivea.*</i> | <i>Grus canadensis.</i> | <i>Puffinus ————?</i> |
| <i>Milvulus ————?</i> | <i>Florida carulea.†</i> | <i>Chroicocephalus atricilla.†</i> |
| <i>Protonotaria citrea.</i> | <i>Ereunetes pusillus.</i> | <i>Sterna aranea.</i> |
| <i>Dendroica superciliosa.</i> | <i>Harelda glacialis.</i> | <i>Sterna wilsoni.</i> |
| <i>Pinicola canadensis.*</i> | <i>Melanetta velvetina.</i> | <i>Rhynchops nigra.†</i> |
| <i>Ægiothus linarius.*</i> | <i>Pelionetta perspicillata.</i> | <i>Graculus dilophus.</i> |
| <i>Plectrophanes nivalis.*</i> | <i>Oidemia americana.</i> | <i>Colymbus torquatus.*</i> |
| <i>Otamaepelia passerina.†</i> | | |

* From the north in severe winters.

† From the south towards the end of summer.

F.

SOME SPECIES NOT INCLUDED IN THE LIST, WHICH ARE PROBABLY YET TO BE DETECTED IN THE DISTRICT.

| | | |
|-------------------------------|----------------------------------|----------------------------------|
| <i>Nauclerus furcatus.</i> | <i>Curvirostra americana.✓</i> | <i>Macrorhamphus griseus.</i> |
| <i>Nyctale acadica.</i> | <i>Curvirostra leucopterus.✓</i> | <i>Micropalama himantopus.</i> |
| <i>Dendroica carulea.</i> | <i>Plectrophanes lapponicus.</i> | <i>Porzana noveboracensis.</i> |
| <i>Vireo philadelphicus.</i> | <i>Melospiza lincolni.</i> | <i>Sterna forsteri.✓</i> |
| <i>Cistothorus stellaris.</i> | <i>Aegialitis semipalmatus.✓</i> | <i>Geothlypis philadelphia.✓</i> |

SUMMARY.

| | |
|---------------------------|-----|
| Permanent residents..... | 44 |
| Winter residents..... | 44 |
| Summer residents..... | 59 |
| Regular visitants..... | 54 |
| Accidental visitants..... | 25 |
| Total..... | 226 |

PRIZE QUESTIONS OF SCIENTIFIC SOCIETIES.

In accordance with a request from Utrecht, we give the following translation of the proceedings of several of the Holland societies, relative to prize questions proposed by these establishments for free competition to the citizens of all nations. We regret that we have not received a full set of these proceedings, but hope to present in a future report the remainder of the series.—*Sec. Sm. Inst.*

EXTRACT FROM THE PROCEEDINGS OF THE HOLLAND SOCIETY OF SCIENCE AT HARLEM, FOR THE YEAR 1856.

The society held its 104th annual session on the 17th of May, 1856. Since its last session it has received: 1st. A memoir, written in German, and having the epigraph, "*Nec aspera terrent.*" This memoir was written as a reply to the following question:

"A history is requested of the development of the *Petromyzon fluviatilis*, illustrated by the necessary figures, and compared with that of other fishes, according to the researches of Von Baer, Rathke, and C. Vogt."

This memoir does not, in fact, contain the history of the *Petromyzon fluviatilis*, but that of *P. Planeri*. However, this latter species is so near akin to the other, that the memoir substantially answers the purpose proposed for it by the society, and the gold medal is therefore awarded to the author, Dr. Max Sigmund Schultze, doctor of medicine and philosophy, and professor extraordinary of anatomy in the University of Halle.

The society has received: 2dly. A memoir, written in German, bearing the epigraph, "*Amicus Plato, amicus Socrates, sed magis amica veritas,*" and relative to the following question published by the society:

"The illustrious director of the University of Pulkowa, the Astronomer F. G. W. Struve, published in 1847 his well-known book, entitled "STUDIES IN STELLAR ASTRONOMY." In that work he communicates, as the result of his observations, some very remarkable details concerning the structure of the universe and the transparency of space. The London Astronomical Society, in its report of the twenty-eighth general meeting, gave the support of its authority to Struve's results, while, on the other hand, the celebrated astronomer J. F. Encke, in No. 622 of the *Astronomische Nachrichten*, considers them hypothetical and without foundation. The society, consequently, desires that a profound and scrupulous examination may

